



Water Resources North Regional Plan – Environmental Assessment

Scoping Report

Customer:

Water Resources North Regional Group

Customer reference:

Environmental Assessment of the Regional Plan

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1 Introduction

1.1 Background and Purpose of Report

Water Resources North (WReN) is one of five regional water resources groups working under the National Framework for Water Resources (the 'National Framework')¹.

WReN are developing a regional water resources plan for Yorkshire and the North East of England (the 'Regional Plan') to help to facilitate sustainable growth across Yorkshire, the Humber and the North East, whilst also protecting and enhancing the region's valuable natural environment. As the region has a surplus of water, WReN are working with other regional water resources groups (principally Water Resources West and Water Resources East) to help secure resilient water supplies for the country as a whole.

A fundamental part of producing the Regional Plan is integrating environmental effects into the decision-making process to select the preferred plan and also evidencing compliance with the environmental legislation. The aim of environmental assessment within the plans is to provide for a high level of protection of the environment, integrating environmental considerations into the preparation and adoption of the plan with a view to contributing to sustainable development. Throughout the course of the development of the Regional Plan, the environmental assessments will seek to identify, describe and evaluate the likely significant effects on the environment of implementing the plan, as well as proposing measures to avoid, manage or mitigate any significant adverse effects and to enhance any beneficial effects.

This Scoping Report sets out the approach to the environmental assessment of the Regional Plan. These assessments consist of:

- Strategic Environmental Assessment (SEA) incorporating Invasive Non-Native Species assessment (INNS) and Biodiversity Net Gain (BNG);
- Habitats Regulation Assessment (HRA); and
- Water Framework Directive (WFD) assessment.

The Regional Plan option appraisal will also integrate Natural Capital Assessment (NCA). Full details of the proposed approach are presented in the 'WReN Options Appraisal workstream: definition and implementation' document, however, a description of the key linkages to the SEA process is included in this Scoping Report (see Section 5.6).

The scoping process is important in setting the context for the assessments and provides the opportunity for stakeholder engagement and feedback at an early stage in establishing the approach to the assessment. The Scoping Report describes the current and future environmental baseline within the geographical area that could be affected by the Regional Plan, and identifies key issues and objectives of plans and programmes that are potentially relevant to the Regional Plan. In particular, the environmental baseline and key issues set out in this Scoping Report inform the development of SEA objectives that will form the basis of the SEA of the Regional Plan.

1.2 Consultation

There will be two key opportunities for consultation on the Regional Plan environmental assessments: firstly, at this Scoping Stage and secondly, on publication of the draft Regional Plan in early 2022 which will be accompanied by the associated assessment reports.

Consultees are invited to express their views on the scope of the assessment as set out in this Scoping Report. A five-week consultation period has been provided in line with SEA Regulation 12(5).

According to the SEA Regulations, the statutory bodies to be consulted on the SEA (including the Scoping Report) in England are the Environment Agency, Natural England and Historic England. WReN

¹ <https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources>

has also invited comments on the proposed approach from wider WReN stakeholders including stakeholders from the energy, agriculture, environment, and industry sectors.

The consultation period for this Scoping Report will run from 20 April 2021 to 25 May 2021. You can submit your comments by email to Yasmina Gallagher (Yasmina.z.gallagher@yorkshirewater.co.uk).

All comments received will be reviewed and a report published setting out responses to the comments and how the approach to the SEA has changed in response to the comments received.

2 Description and Context of the WReN Regional Plan

2.1 Background and Purpose

WReN is designed to oversee water resources planning for Yorkshire and the North East of England. It is formed of three water companies operating in the north east of England, including Yorkshire Water, Northumbrian Water and Hartlepool Water (part of Anglian Water), as shown in **Figure 2.1**. Although WReN's core members and funders are the three water companies, key regulators and stakeholders act to provide support on direction and decisions in an advisory capacity. Further information can be found on the WReN website².

WReN is actively engaging with and involving those who have an interest in water resources in the region. This includes sectors other than public water supply who make beneficial use of the water in the environment, such as agriculture, industry and energy. The importance of water to the region's environment, ecology and biodiversity will also play a key role in shaping WReN's future plans.

2.2 Description of the WReN Regional Plan

WReN are working with water companies and their customers, other water dependent sectors of the economy such as the agriculture and power sectors, and environmental groups and regulators. WReN's aim is to develop a long-term plan for managing water resources in the region, which will be published for consultation in early 2022.

Where this plan impacts on public water supply – the drinking water that is supplied by the water companies in the WReN region – it will be reflected in the water companies' statutory draft Water Resource Management Plans (WRMPs) which will be submitted to Defra in August 2022 and consulted on shortly afterwards. Where this plan affects other sectors, WReN will look to work with those sectors to understand how they can also support long term water resources resilience in the north, including looking for opportunities for collaborative solutions.

The options identification process is ongoing and will result in a list of feasible supply options to meet the needs of the region which could be for public water supply, non-public water supply or environmental improvements.

2.3 Relevant Guidance

The Environment Agency's National Framework³ sets out the requirement for development of regional plans.

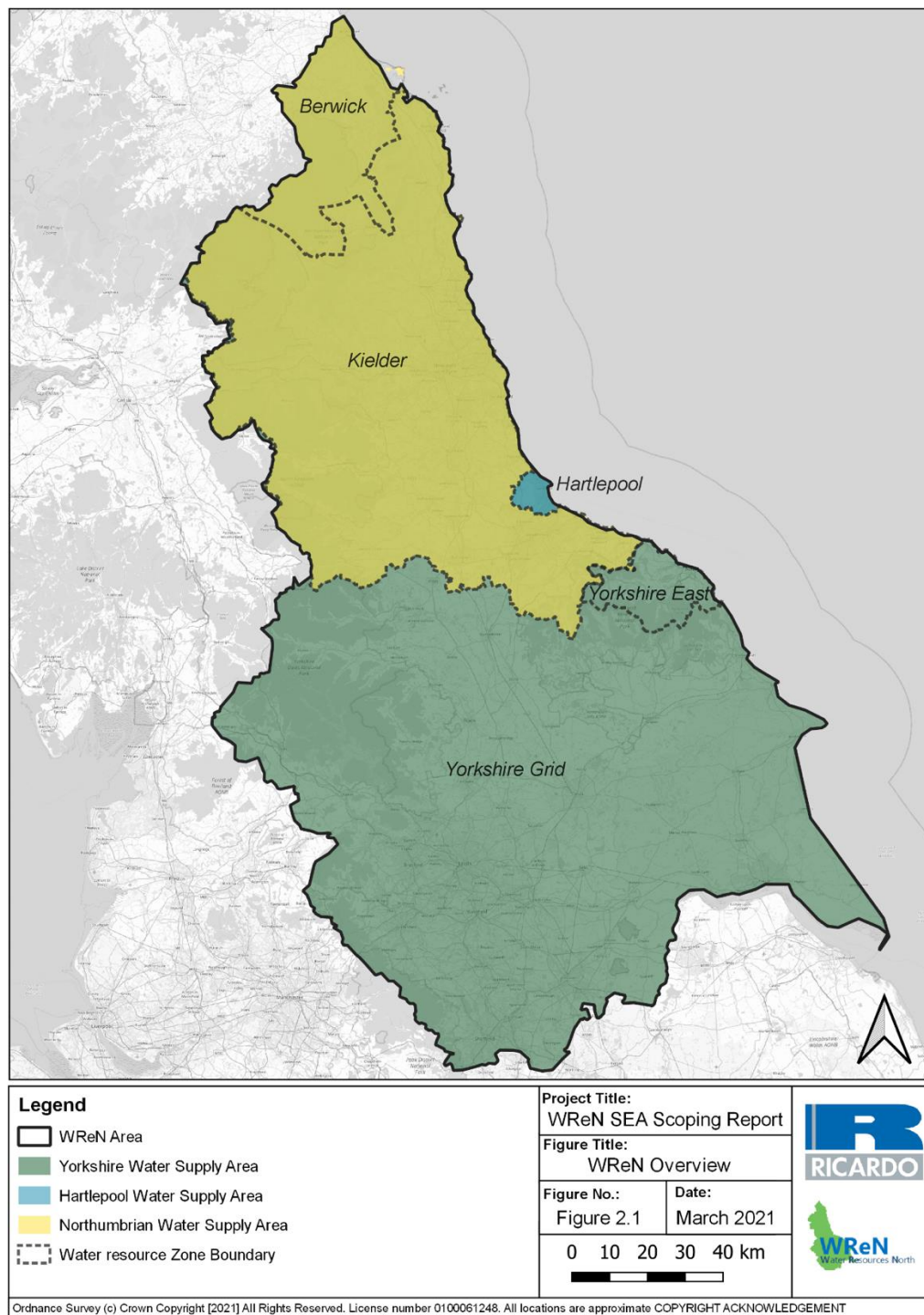
The National Framework Appendix 2 'Regional Planning' provides a framework for Regional Plans and sets out the actions that 'must, should and could' feature in regional plans. Amongst the requirements are that it:

- must include enhanced environmental improvements;
- must also comply with SEA and HRA legislation;
- should look to use the natural capital approach in their decision making where appropriate; and

² <https://www.waterresourcesnorth.org/>

³ <https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources>

- must include environmental net gain in their decision making, to achieve measurable improvements for the environment on a regional and local level.
- **Figure 2.1: Study Area and Relevant Water Company Boundaries**



The decision making process for determining WReN solutions to regional and national needs will be developed following the Environment Agency Water Resource Planning Guidelines (WRPG)⁴ and supplementary guidelines on Best Value Planning and Environment and Social Decision Making. The Supplementary Guidance 'Environment and society in decision making' was issued in March 2020 for consultation⁵ and contains a number of requirements and recommendations for the scope of WRMP environmental assessment, in particular in relation to SEA, BNG and NCA. The Regional Plan will need to be reflected in the WRMPs and the assessments will therefore need to be consistent with the requirements of the WRPG.

UK Water Industry Research (UKWIR) have developed a number of methodologies which support the WRPG. This includes an updated guidance document for SEA, HRA, and new guidance for WFD assessment and NCA for strategic water resource plans and drought plans⁶. The guidance has recently been updated for WRMP24 and regional plans to account for recent developments in regulatory guidance, new legislation and current best practice methods.

The UK Government has also produced generic SEA guidance⁷ that sets out the stages of the SEA process - the 'ODPM Practical Guide', which provides best practice guidance.

Table 2.1 is an extract from the ODPM Practical Guide that sets out the main stages of the SEA process and the purpose of each task within the process. This Scoping Report represents Stage A: Tasks A1 to A4 of the SEA process.

Table 2.1 SEA Stages and Tasks

SEA Stages and Tasks	Purpose
Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope	
Task 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 identify SEA objectives
Task 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
Task A3. Identifying environmental problems	To help focus the SEA and streamline the subsequent stages, including baseline information analysis, setting of the SEA objectives, prediction of effects and monitoring.
Task A4. Developing SEA Objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed.
Task A5. Consulting on the scope of the SEA	To ensure the SEA covers the likely significant environmental effects of the plan or programme.
Stage B: Developing and refining alternatives and assessing effects	
Task B1. Testing the plan or programme objectives against SEA objectives	To identify potential synergies or inconsistencies between the objectives of the plan or programme and the SEA objectives and help in developing alternatives.
Task B2. Developing strategic alternatives	To develop and refine strategic alternatives
Task B3. Predicting the effects of the plan or programme, including alternatives	To predict the significant environmental effects of the plan or programme and its alternatives

⁴ Environment Agency (2021) Water resources planning guideline, draft for consultation, March 2021. Available at <https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline>

⁵ Environment Agency (2021) Water resources planning guideline supplementary guidance – Environment and society in decision-making. External guidance: 18643. March 2021.

⁶ UKWIR (2021) Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans. Report Ref 21/WR/02/15.

⁷ Office of the Deputy Prime Minister (2005). A Practical Guide to the Strategic Environmental Assessment Directive.

SEA Stages and Tasks	Purpose
Task B4. Evaluating the effects of the plan or programme, including alternatives	To evaluate the predicted effects of the plan or programme and its alternatives and assist in the refinement of the plan or programme
Task B5. Mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered.
Task B6. Proposing measures to monitor the environmental effects of plan or programme implementation	To detail the means by which the environmental performance of the plan or programme can be assessed.
Stage C: Preparing the Environmental Report	
Task C1. Preparing the environmental report	To present the predicted environmental effects of the plan or programme, including alternatives, in a form suitable for public consultation and use by decision-makers.
Stage D: Consulting on the Draft Plan or programme and the Environmental Report	
Task D1. Consulting the public and consultation bodies on the draft plan or programme and the Environmental Report	<p>To give the public and the consultation bodies an opportunity to express their opinions on the findings of the Environmental Report and to use it as a reference point in commenting on the plan or programme.</p> <p>To gather more information through the opinions and concerns of the public</p>
Task D2. Assessing significant changes	To ensure that the environmental implications of any significant changes to the draft plan or programme at this stage are assessed and taken into account
Task D3. Making decisions and providing information	To provide information on how the Environmental Report and consultees opinions were taken into account in deciding the final form of the plan or programme to be adopted
Stage E: Monitoring the significant effects of the plan or programme on the environment	
Task E1. Developing aims and methods for monitoring	To track the environmental effects of the plan or programme to show whether they are as predicted; to help identify adverse effects
Task E2. Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified.

2.3.1 All Company Working Group methodologies

As part of the assessment of water companies' PR19 business plans, Ofwat introduced proposals in their December 2019 Final Determination⁸ to support the delivery of Strategic Regional Water Resource Options (SROs) over the next 5 to 15 years with solutions required to be 'construction ready' for the 2025-2030 period. Ofwat set out a RAPID gateway process⁹, for development of SROs for the co-ordination and development of a consistent set of SROs.

In October 2020, the group of Water Companies involved in developing SROs in the RAPID gateway process (known as the All Company Working Group - ACWG), published guidance¹⁰ for environmental assessment methods for SROs which is aligned to the draft WRPG to increase the consistency of environmental assessment. This is supplemented with the ACWG Strategic Environmental Assessment: Core Objective Identification report (October 2020). These being the SEA objectives that the ACWG identified following a review of Water Company approaches to SEA.

There are currently no SROs in WReN that fall into the RAPID gateway process, however, the development of methodologies for the WReN environmental assessment has had regard to the ACWG guidance and the RAPID requirements as much as is practicable. This will facilitate inter-regional comparison and future assessment should WReN options be considered for the gated process at a later date.

⁸ Ofwat (2019), PR19 Final Determinations, Strategic regional water resource solutions appendix

⁹ Regulatory Alliance for Progressing Infrastructure Development (RAPID) Gated planning process <https://www.ofwat.gov.uk/regulation/companies/rapid/>

¹⁰ Mott MacDonald Limited (2020). All Companies Working Group WRMP environmental assessment guidance and applicability with SROs. Published October 2020

3 Policy Context

A review of relevant plans, policies and programmes is presented in **Appendix A**. A summary of key messages derived from the review is presented below in **Table 3.1**. The review identifies how the WReN Regional Plan might be influenced by other plans, policies, programmes and other objectives which the Regional Plan should consider. This information has helped to identify and inform the scope of the assessment, in particular the objectives for the SEA process.

Relevant plans, policies and programmes were identified from the wide range that has been produced at an international, national, regional and local level. The emphasis is on “relevant”: plans and programmes that have no likely interaction with the Regional Plan (i.e. they are unlikely to influence the Regional Plan, or be influenced by it), have been excluded from the review.

The review and the key messages derived from it are documented in **Appendix A**. Alongside the current and future baseline information reviewed in Section 4, the key messages have been used to develop proposed objectives for the SEA (see Section 5).

Table 3.1 Key policy messages and objectives derived from the review of plans, policies and programmes

SEA Topic	Key Messages and Objectives
Biodiversity, flora and fauna	<p>Conservation and enhancement of the natural environment and of biodiversity, particularly internationally and nationally designated sites and priority habitats and species (NERC Act Section 41 for England), whilst taking into account future climate change.</p> <p>Promote a catchment-wide approach to water use to ensure better protection of biodiversity.</p> <p>To achieve favourable condition for priority habitats and species in particular designated sites.</p> <p>Avoidance of activities likely to cause irreversible damage to natural heritage.</p> <p>Support well-functioning ecosystems, respect environmental limits and capacities, and maintain/enhance coherent ecological networks, including provision for fish passage and connectivity for migratory/mobile species.</p> <p>Strengthen the connections between people and nature and realise the value of biodiversity.</p> <p>Protection, conservation and enhancement of natural capital. Ecosystem services from natural capital contributes to the economy and therefore should be protected and, where possible, enhanced.</p> <p>Avoidance of activities likely to cause the spread of Invasive Non-Native Species (INNS)</p> <p>A need to protect the green infrastructure network.</p>
Population and human health	<p>Water resources play an important role in supporting the health and recreational needs of local communities and businesses.</p> <p>To ensure all communities have a clean, safe and attractive environment in which people can take pride.</p> <p>To ensure secure, safe, reliable, dependable, sustainable and affordable supplies of water are provided for all communities.</p> <p>Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities.</p> <p>Promotion of healthy communities and protection from risks to health and wellbeing.</p> <p>Promotion of a sustainable economy supported by access to essential utility and infrastructure services.</p>
Material assets and resource use	<p>Promote sustainable production and consumption whilst seeking to reduce the amount of waste generated by using materials, energy and water more efficiently.</p> <p>Consider issues of water demand, water supply and water quality in the natural environment and ensure a sustainable use of water resources.</p>

SEA Topic	Key Messages and Objectives
	<p>Contribute to a resource efficient, green and competitive low carbon economy. Maintain a reliable public water supply and ensure there is enough water for human uses, whilst seeking to maintain a healthy water environment.</p> <p>Minimise the production of waste, ensure waste management is in line with the 'waste hierarchy', and eliminate waste sent to landfill.</p> <p>Promote the sustainable management of natural resources.</p>
Water	<p>Promote sustainable water resource management, including a reduction in water consumption.</p> <p>Maintain and improve water quality and water resources (surface waters, groundwater and bathing water).</p> <p>Meet protected area targets related to water quality and flow in the Water Framework Directive.</p> <p>Expand the scope of water quality protection measures to all waters, surface waters and groundwater.</p> <p>Improve the quality of the water environment and the ecology which it supports, and continue to provide high levels of drinking water quality.</p> <p>Ensure appropriate management of abstractions and protect flow and level variability across the full range of regimes from low to high conditions.</p> <p>Prevent deterioration of water body status.</p> <p>Balance the abstraction of water for supply with the other functions and services the water environment performs or provides.</p> <p>Steer new development to areas with the lowest probability of flooding and manage any residual flood risk, taking account of the impacts of climate change.</p> <p>Promote measures to enable and sustain long term improvement in water efficiency.</p> <p>Promote a catchment based approach to the management and work with local stakeholders to deliver catchment-based solutions to water quantity and quality.</p> <p>Develop a resilient and flexible water management approach to cope with changing climate, population and economic conditions.</p> <p>Reduce flood risk to people, residential and non-residential properties, community facilities and key transport links, as well as designated nature conservation sites and heritage assets and landscapes of value.</p> <p>Reduce risk of flooding by changing operation of reservoirs.</p>

SEA Topic	Key Messages and Objectives
Soil, geology and land use	<p>Protect and enhance the quality and diversity of geology (including geological SSSIs) and soils, including geomorphology and geomorphological processes which can be lost or damaged by insensitive development.</p> <p>Ensure that soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.</p> <p>Promote catchment-wide approach to land management by relevant stakeholders, in order to benefit natural resources, reduce pollution and develop resilience to climate change.</p> <p>Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions.</p> <p>Encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value.</p>
Air and climate	<p>Reduce greenhouse gas emissions. Targets include: reduce the UK's greenhouse gas emissions by at least 80% (relative to 1990 levels) by 2050.</p> <p>Reduce the effects of air pollution on ecosystems.</p> <p>Improve overall air quality.</p> <p>Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change.</p> <p>Build in adaption to climate change to future planning and consider the level of urgency of associated risks of climate change impacts accordingly.</p> <p>Need for adaptive measures to respond to likely climate change impacts on water supply and demand.</p> <p>Achieve and sustain compliance with and contribute towards national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas.</p> <p>Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change.</p>

SEA Topic	Key Messages and Objectives
Archaeology and cultural heritage	<p>Built development in the vicinity of historic buildings and Scheduled Monuments could have implications for the setting and/or built fabric and cause damage to any archaeological deposits present on the site.</p> <p>Ensure active management of the Region's environmental and cultural assets.</p> <p>Ensure effects resulting from changes to water level (surface or sub-surface) on all historical and cultural assets are avoided. Consider effects on important wetland areas with potential for paleo-environmental deposits.</p> <p>Promote the conservation and enhancement of the historic environment, including the promotion of heritage and landscape as central to the culture of the region and conserve and enhance distinctive characteristics of landscape and settlements.</p> <p>Conserve and enhance the historic environment, heritage assets and their settings.</p>
Landscape and visual amenity	<p>Protection and enhancement of landscape (including designated landscapes, landscape character, distinctiveness and the countryside)</p> <p>Abstraction and low river flows could negatively affect landscape and visual amenity.</p> <p>Enhance the value of the countryside by protecting the natural environment for this and future generations.</p> <p>Improve access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders.</p>

4 Environmental Baseline Review

4.1 Introduction

An essential part of the SEA process is to identify the current baseline conditions and their likely evolution in the absence of the Regional Plan. It is only with knowledge of baseline conditions that potential impacts of the Regional Plan and its schemes can be identified, monitored, and if necessary mitigated.

Baseline data have been drawn from a variety of sources, including a number of the plans, policies and programmes reviewed and summarised earlier in **Table 3.1** and **Appendix A**. The sections below also summarise the likely future trends in the environmental and social issues considered (where information is available to do so). The key issues arising from the review of baseline conditions are summarised at the end of each sub-section.

4.1.1 Limitations of the data and assumptions made

The principal limitations surround the future social and environmental baseline where there are substantial differences in the availability and temporal resolution of robust projections across the various SEA topic areas: for example, whilst some water companies are planning up to 80 years ahead and climate change estimates extend to a similar horizon, regional population and housing forecasts rarely go beyond a 40 year horizon and forecasts of how the natural environment may change are very limited.

The study area for the SEA is relatively large and covers a number of different geographical and political regions, which makes establishing a baseline at the sub-regional level challenging. There are also challenges around extrapolating information from data collated at differing spatial resolutions. Spatial data have been obtained for most of the SEA topics, and the baseline is presented graphically as mapped information where appropriate. In some instances, reporting cycles mean that available information is dated.

Data have generally been sourced from national or regional bodies where information is collected for the Yorkshire and North East region using consistent methods. This allows for a more effective comparison between the regional and national averages; however, reliance on these data sets has in some cases meant that information is a number of years old.

4.2 Overview of Region

The WReN region encompasses a varied landscape, from the Peak District National Park in the South West, stretching to the Northumberland National Park in the Scottish borders and the North Sea coastline along the Eastern side of the region. Annual average rainfall across the region varies; highest near the Yorkshire Dales, whilst low lying areas average less than half the volume of rainfall each year, with little seasonal variation.

4.2.1 Yorkshire and the Humber

Yorkshire Water supplies the region of Yorkshire and the Humber. Urban areas in the west and south of Yorkshire are principally supplied from reservoirs in the Pennines. Reservoirs located in the Pennines and the valleys of the River Don, Aire, Wharfe, Calder, Nidd and Colne provide the largest upland sources of water in the region. The Yorkshire Water region is divided into two water resource zones; the Grid Surface Water Zone, which provides for over 99% customers, and the East Surface Water Zone, which is a small area covering Whitby and part of the North York Moors National Park.

Yorkshire Water operates over 100 impounding reservoirs of which two are major pumped storage reservoirs. The total storage capacity of all the supply reservoirs amounts to some 160,000 million litres (Ml). Approximately 45% of the water supplied by Yorkshire Water is from reservoirs, 30% from rivers and 25% from boreholes.

4.2.2 North East

Northumbrian Water provides water and sewerage services to 2.7 million people across the north east of England. Northumbria Water's water network comprises 29 impounding reservoirs. Northumbria's area is divided into two WRZs, the Kielder WRZ and the Berwick WRZ, accounting for 99% and 1% of water demand respectively. Kielder WRZ is predominantly fed by reservoirs, including Kielder Reservoir which has a total storage capacity of 200,000 million litres. Kielder WRZ is also supplied by a number of groundwater sources and isolated springs. Berwick WRZ is supplied by boreholes.

Hartlepool is serviced by Anglian Water. The area is supplied from the deeply confined aquifer of the Magnesium Limestone.

4.3 Biodiversity, Fauna and Flora

4.3.1 Baseline

Biodiversity is the variety of plants (flora) and animals (fauna) in an area, and their associated habitats. The importance of preserving biodiversity is recognised from an international to a local level. Biodiversity has importance in its own right, and has value in terms of quality of life and amenity. The WReN includes a number of sites that are designated as important for biodiversity at an international level (**Figure B1** (Appendix B)). Special Protection Areas (SPA)¹¹, Special Areas of Conservation (SAC)¹² and Ramsar¹³ sites are listed in **Table 4.1**.

Table 4.2 provides numbers of Sites of Special Scientific Interest (SSSI)¹⁴ (these are also shown on **Figure B1**) and National Nature Reserves (NNRs)¹⁵ within each WRZ in Yorkshire Water's supply area. SSSIs and NNRs relate to the country's best wildlife and geological sites.

Table 4.1: Special Protection Areas, Special Areas of Conservation and Ramsar within the WReN region

Site and Designation	Relevant Water Company Water Resource Zone (see Figure 2.1)
SPA	
North York Moors	Grid; East, Kielder
Hornsea Mere	Grid
Flamborough Head & Filey Coast	Grid
Lower Derwent Valley	Grid
North Pennine Moors	Kielder, Grid
Peak District Moors (South Pennine Moors Phase 1)	Grid
Humber Estuary	Grid
South Pennine Moors Phase 2	Grid
Thorne & Hatfield Moors	Grid
Northumberland Marine	Kielder and Berwick

¹¹ Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), also known as the Birds Directive, which came into force in April 1979. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species. www.jncc.org.uk

¹² Special Areas of Conservation (SACs) are strictly protected sites designated under the EC Habitats Directive. Article 3 of the Habitats Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive (as amended). www.jncc.org.uk

¹³ Ramsar sites are wetlands of international importance designated under the Ramsar Convention.

¹⁴ Natural England has responsibility for identifying and protecting the SSSIs in England under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000). www.naturalengland.org.uk

¹⁵ NNRs are protected under Sections 16 to 29 of the National Parks and Access to the Countryside Act, 1949 and the Wildlife and Countryside Act, 1981.

Site and Designation	Relevant Water Company Water Resource Zone (see Figure 2.1)
Teessmouth and Cleveland Coast	Kielder and Hartlepool
Greater Wash	Grid
SAC	
Flamborough Head	Grid
Ingleborough Complex	Grid
Beast Cliff-Whitby (Robin Hood's Bay)	East, Grid
Lower Derwent Valley	Grid
Strensall Common	Grid
North Pennine Moors	Kielder, Grid
River Derwent	Grid
Kirk Deighton	Grid
Arnecliffe & Park Hole Woods	East
Ox Close	Grid
North York Moors	Kielder, Grid; East
Craven Limestone Complex	Grid
Skipwith Common	Grid
North Pennine Dales Meadows	Grid
Ellers Wood & Sand Dale	Grid
Fen Bog	East, Grid
South Pennine Moors	Grid
Hatfield Moor	Grid
Denby Grange Colliery Ponds	Grid
Thorne Moor	Grid
Humber Estuary	Grid
Border Mires, Kielder-Butterburn	Kielder
North Pennines Dales Meadows	Kielder
Tyne & Allen River Gravels	Kielder
North Pennines Moors	Kielder
Roman Wall Loughs	Kielder
Simonside Hills	Berwick
Harbottle Moors	Berwick
Castle Eden Dene	Kielder

Site and Designation	Relevant Water Company Water Resource Zone (see Figure 2.1)
Durham Coast	Kielder
Berwickshire & North Northumberland Coast	Berwick
North Northumberland Dunes	Berwick
Moor House-Upper Teesdale	Kielder
Newham Fen	Berwick
Thrislington	Kielder
Ford Moss	Berwick
Tweed Estuary	Berwick
River Tweed	Berwick
Ramsar	
Malham Tarn	Grid
Humber Estuary	Grid
Lower Derwent Valley	Grid
Irthinghead Mires	Kielder
Lindisfarne	Berwick
Holburn Lake and Moss	Berwick
Northumbria Coast	Kielder
Teesmouth and Cleveland Coast	Kielder

Table 4.2: Nationally Designated Nature Conservation Sites

Nationally Designated Sites	Number within WReN region
SSSIs	661
NNR	26

In addition to the NNRs listed above, there are 225 Local Nature Reserves (LNRs)¹⁶ within the SEA Study Area. **Figure B1** (Appendix B) also identifies NNRs and LNRs. A number of non-statutory designated sites are also present in the region such as local wildlife sites (LWSs).

There are a range of designated Natural Environment and Rural Communities (NERC) Act Section 41 habitats within the WReN area¹⁷. NERC habitats include rivers and streams, blanket bogs, reedbeds, fens and meadows. NERC priority species include:

- Otter
- Water vole
- Atlantic salmon

¹⁶ a LNR is a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949, and amended by Schedule 11 of the Natural Environment and Rural Communities Act 2006, by principal local authorities.

¹⁷ Defra (accessed March 2021) MAGIC Interactive map: Habitat Inventories (<http://magic.defra.gov.uk/>)

- European eel
- Sea/Brown trout
- River lamprey
- White clawed crayfish
- Snakeshead Fritillary
- Loddon Lilly
- Creeping Marshwort
- Narrow-leaved water-dropwort
- River water-dropwort
- Fine-lined pea mussel
- Freshwater pea mussel
- Depressed river mussel
- Greater water parsnip
- Club-tailed dragonfly
- Tassel stonewort
- Desmoulins whorl snail
- Snipe
- Lapwing
- Natterer's bat
- Daubenton's bat
- Pipistrelle bat.

Natural England has defined a series of 120 Natural Areas as a means to conserve nature in England. They are areas of countryside identified by the unique combination of physical attributes, wildlife, land use and culture. Key messages regarding habitat type relevant to the WReN area are presented in **Table 4.3**.

Table 4.3: Natural Areas encompassed by the WReN area

Natural Area	WRZ	Region	Key Features
North Pennines	Grid	Yorkshire	Expansive moorlands, grasslands and flower-rich meadows are important features; Upland bogs and acid grassland cover much of the area; The area attracts large numbers of insects, waders and birds of prey; Varied geology (including gorges, shakeholes, caves and pavements) and associated waterfalls are important features.
Tees Lowlands	Grid	North East	Low lying land adjacent to the River Tees; Grazing marsh, open water and wetlands are important features.
Yorkshire Dales	Grid	Yorkshire	Glaciated, upland landscape of rounded hills and moors; Geologically important karst limestone landforms, cave systems and exposures of carboniferous rocks with associated habitats of international importance.
Forest of Bowland	Grid	Yorkshire	The area is dominated by rolling heather moorland and blanket bog;

Natural Area	WRZ	Region	Key Features
			Internationally important grouse and sheep populations;
Lancashire Plain and Valleys	Grid	Yorkshire	<p>Intensively farmed area with arable, horticulture and dairy farming;</p> <p>Significant area for wintering waders and wildfowl due to the area's proximity to internationally important estuaries;</p> <p>Numerous field ponds supporting great crested newt populations;</p> <p>Water vole populations present in the network of field drains of the coastal plain.</p>
Southern Pennines	Grid	Yorkshire/ North West	<p>Upland areas of heather moorland, blanket bog and acid grassland are essential character of the area</p> <p>Internationally important populations of red grouse, curlew, merlin, golden plover, dunlin and short-eared owl.</p>
Pennine Dales Fringe	Grid	Yorkshire	Rolling landscapes at the transition between the Pennines and Yorkshire Dales.
Vale of York and Mowbray	Grid	Yorkshire	<p>Riverine habitats such as Lower Derwent Valley supporting internationally important flood meadow grasslands and breeding/wintering bird populations;</p> <p>Important heathland areas.</p>
North York Moors and Hills	Grid; East SW, East GW	Yorkshire	<p>Large expanse of open heather moorland, supporting vegetation and breeding birds (in particular Golden Plover and Merlin);</p> <p>Species-rich limestone grassland and calcareous fens on southern fringe of the area.</p>
Vale of Pickering	Grid; East SW, East GW	Yorkshire	Floodplain grasslands (supported by the River Derwent) which are particularly important for breeding and wintering bird populations.
Yorkshire Wolds	Grid; East GW	Yorkshire	<p>Crescent-shaped area of hills with near-vertical cliffs;</p> <p>Small spring-fed flushes arising from the Western escarpment and the coastal parts of the Wolds.</p>
Holderness	Grid; East GW	Yorkshire	Low lying plain of boulder clay, with areas of gravel and sand; Area supports a variety of wildlife associated with the river Hull and adjacent wetlands.
Humber Estuary	Grid	Yorkshire	Internationally important site Migratory wildfowl, Vast expanses of exposed mudflats.
Humberhead Levels	Grid	Yorkshire	Plains dominated by major river systems (Ouse and Trent); Peatland areas internationally important for their nature conservation features.

Natural Area	WRZ	Region	Key Features
Southern Magnesian Limestone	Grid	Yorkshire	Base-rich flushes, river and streams forming important wetland features; Important geological sections including limestone gorges and caves containing Pleistocene sediments.
Coal Measures	Grid	Yorkshire	Area characterised by dense populations of towns/cities developed as a result of underlying coal fields (Shales and sandstones of late Carboniferous age c. 320-295 million years old).
Dark Peak	Grid	Yorkshire	Area of peat covered hills dissected by narrow cloughs; Dominated by upland heather and blanket bog; Reservoirs are key characteristic feature of the area.
Derbyshire Peak Fringe and Lower Derwent	Grid	Yorkshire	Area dominated by rivers and reservoirs providing important habitats for pondweeds, great crested newts, migrating waders and wildfowl.
Border Uplands	Kielder	North East	Area of peat and glacial drift covered hills; Dominated by moorland and blanket bog; Rivers are of considerable ecological importance.
Durham Magnesian Limestone Plateau	Kielder	North East	Open, agricultural landscape with a steep limestone escarpment to the west and a dramatic coast of limestone cliffs, headlands and bays to the east. The Magnesian Limestone aquifer that sits below the area is an important source of drinking water.
Northumbria Coal Measures	Kielder and Berwick	North East	The river valleys provide important wildlife refuges within an intensively managed landscape featuring important habitat features. Heathlands, wetlands and flower-rich grasslands are scattered through the area. Ponds, often forming by mining subsidence, extend the network of wetland areas which are of value for birds.
North Northumberland Coastal Plain	Berwick	North East	Varied landscape consisting of rocky headlands and cliffs, long sandy beaches and dunes, and extensive intertidal mudflats and salt marsh around Lindisfarne. The nationally important Whin Sill outcrops both inland and at the coast, supports rare Whin grassland, and forms the Farne Islands offshore.

4.3.1.1 Invasive Non-native Species

Invasive non-native species are widespread across the river catchments of the WReN area. These species include terrestrial plants such as Himalayan Balsam and Giant Hogweed; aquatic macrophytes such as Floating Pennywort and New Zealand Stonecrop; and aquatic invertebrates, notably Signal Crayfish and Zebra Mussels.

4.3.2 Future Baseline

The Defra 25 Year Environment Plan¹⁸ includes a commitment to restore restoring 75% terrestrial and freshwater protected sites to favourable condition and to create or restore 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits. The 25 Year Plan also proposed an adoption of 'Biodiversity Net Gain' approach to development, an approach introduced into national planning policy in 2019 and which will be mandated by the upcoming Environment Bill.

The 25 year Plan also includes a commitment to support land management at landscape and catchment level and to support the adoption of long-term sustainable land management practices to significantly expand wildlife habitat and provide opportunities for species and ecosystem recovery.

Climate change is anticipated to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity, and water scarcity. It is acknowledged that there is a need to allow wildlife to adapt to the impacts of climate change. Climate may limit species' distributions indirectly though the impact of invasive species on native species along climatic gradients¹⁹. It will affect the abundance and diversity of natural enemies, competitors and species that constitute resources, as well as a species' ability to compete for resources or resist natural enemies.

4.3.3 Key Issues

The key sustainability issues arising from the baseline assessment for biodiversity are:

- The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation.
- The need to avoid activities likely to cause irreversible damage to natural heritage.
- The need to take opportunities to improve and not reduce connectivity between fragmented habitats.
- The need to control the spread of Invasive Non-Native Species (INNS).
- The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services.

4.4 Population and Human Health

4.4.1 Baseline

4.4.1.1 Population

The WReN area includes both centres of densely populated urban areas within a generally more sparsely populated wider area. Major conurbations within the WReN area include Bradford, Durham, Kingston upon Hull, Leeds, Newcastle upon Tyne, Ripon, Sheffield, Sunderland, Wakefield and York.

The total population (2019) of the North East region is estimated to be 2.7 million and for Yorkshire and the Humber is 5.5 million²⁰.

As shown in **Table 4.4**, population growth in Yorkshire and the Humber and the North East of England is anticipated to be slower than the average rate throughout England.

¹⁸ <https://www.gov.uk/government/publications/25-year-environment-plan>

¹⁹ Pateman & Hodgson (2015) Biodiversity Climate change impacts report card technical paper. Available from: <http://www.nerc.ac.uk/research/partnerships/lwec/products/report-cards/biodiversity/papers/source06/>

²⁰ Data Commons (no date) Ranking by Population

https://datacommons.org/ranking/Count_Person/EurostatNUTS1/wikidataId/Q21?h=nuts%2FUKC

Table 4.4: Population statistics and projections²¹

Region	Mid 2018 population	Mid 2028 Population	Population change over 10 years	% change over period
Yorkshire and the Humber	5,480,000	5,674,000	195,000	3.6
North East	2,658,000	2,719,000	61,000	2.3
England	55,977,000	58,752,000	2,775,000	5.0

Population change is the function of natural change (difference between births and deaths) and net migration (the difference between the number of people moving into and out of an area). The balance of factors underlying population change varies by region. **Table 4.5** below presents the projected population change throughout Yorkshire and the Humber and the North East of England, from 2018 to 2028. The relatively low percentage population change in the North East can partially be attributed to the anticipated negative natural change. In Yorkshire and the Humber there is a predicted to be a large contribution to population change from international migration.

Table 4.5: Projected population change by component of change, mid-2018 to mid-2028

Region	Population change	Natural change	All migration net	Net within UK migration	Net international migration	Other
Yorkshire and The Humber	194,600	48,000	147,000	25,400	121,600	700
North East	61,300	-31,900	93,200	41,100	52,000	500

4.4.1.2 Human Health and Deprivation

In comparison to other regions of England, lowest regional life expectancy for both males and females in 2017 to 2019 was observed in the North East²². Life expectancy in Yorkshire and the Humber was also below the national average.

Table 4.6: Life expectancy 2017 to 2019

Region	Life expectancy in 2017 to 2019	
	Male	Female
Yorkshire and the Humber	78.8	82.5
North East	78.0	81.8
England	79.8	83.4

Health profiles, published by public health England also highlighted that for indicators including under 75 mortality rate from cardiovascular diseases, under 75 mortality rate from cancer and suicide rate, both Yorkshire and the Humber and the North East of England performed worse than the national average²³.

²¹ Office for National Statistics (2020) Subnational population projections for England: 2018-based

²² Office for National Statistics (2020) Life expectancy for local areas of the UK:

²³ Public Health England (2020) Local Authority Health Profiles

4.4.1.3 Economy and Employment

Both the Yorkshire and the Humber and North East regions are polycentric areas with a large and diverse economy. Traditionally, these regions have been dominated by heavy industries such as mining and manufacturing and whilst the latter remains an important component of both regional economies, evidence suggests these regions are transitioning to more diversified business sectors.

Gross value added (GVA) is an indicator that has been developed to measure the economic contribution of individual firms, industries or sectors in the United Kingdom. In 2017, The GVA for Yorkshire and the Humber and the North East was £116,772 billion and £53,235 billion, respectively, which translates to £21,426 and £20,129 per head²⁴. These were between 27-36% below the UK national average of £27,555 per person.

The average gross weekly earnings for full-time employees in the Yorkshire and the Humber in 2019 was £538 and £533 for the North East, which are both below the national average of £585/week²⁵. Unemployment rates for the regions were above the national average in 2018 (4.0%) at between 5.0 and 5.5%. However, between 2017 and 2018, Yorkshire and the Humber saw the second largest regional increase in employment rates (1.1%) meanwhile the North East saw a decrease of 0.5%²⁶.

The COVID-19 pandemic has impacted the economy in numerous ways; from lockdown restrictions forcing the closure of businesses to limits on mobility. In 2020 UK Gross Domestic Product (GDP) fell by 9.8%, the steepest decline since consistent records began in 1948²⁷. Economists differ in how quickly they expect the economy to recover, however average forecast is for GDP growth of 4.8% in 2021. When the economic shock of the pandemic does dissipate it is likely that the crisis will result in lasting damage to the economy.

4.4.1.4 Recreation and Tourism

There are a variety of opportunities for recreation and tourism within the study area. Many of the recreational and cultural offerings are represented in other topic areas in the baseline. For example, the region includes a number of water resources of recreational importance including many reservoirs for sailing or fishing and river sections of particular importance with respect to navigation and angling. Section 4.8 identifies the importance of the study area with respect to heritage assets, including four internationally recognised World Heritage Sites²⁸, 183 Registered Parks and Gardens and 3,998 Scheduled. Section 4.9 describes the landscape baseline, which includes five Areas of Outstanding Natural Beauty (AONB). Public open space, Rights of Way, walking routes or cycle routes are also important with respect to recreation and tourism. The National Planning Policy Framework (NPPF)²⁹ states planning policies should protect and enhance public rights of way and access.

In 2019 £100.8 billion was spent on tourism across England. It is estimated that regional spending on tourism was £8.8 billion for Yorkshire and Humberside and £4.5 billion for the North East³⁰. Visit England recorded a combined total of >7.5 million visitors to the top 20 paid attractions in Yorkshire and Humberside, and the North East region^{31,32}.

4.4.2 Future Baseline

Population is expected to grow at a rate between 2.3% and 3.6% across the region (see Table 4.5), with an increasing proportion of people at or above state pension age.

²⁴ ONS (2018) Regional economic activity by gross value added (balanced) UK.

²⁵ ONS (2019) Employee earnings in the UK:2019

²⁶ ONS (2019) Regional labour market statistics in the UK: January 2019

²⁷ House of Commons Library (2021) Coronavirus: Economic Impact

²⁸ World Heritage Sites are places of international importance for the conservation of mankind's cultural and natural heritage. The World Heritage List was set up by the World Heritage Convention, established by UNESCO in 1972. www.english-heritage.org.uk

²⁹ Communities and Local Government (2012) National Policy Planning Framework

³⁰ Visit England (2019) Tourism in England: Key Facts and Trends https://www.visitbritain.org/sites/default/files/vb-corporate/Documents-Library/documents/England-documents/ve_key_facts_and_trends_2019_csv.pdf

³¹ Visit England (2018) Yorkshire and the Humber Regional Summary – Research and Highlights

https://www.visitbritain.org/sites/default/files/vb-corporate/most_visited_paid_yorkshire_humber_2017.pdf

³² Visit England (2018) North East Regional Summary – Research and Highlights https://www.visitbritain.org/sites/default/files/vb-corporate/most_visited_paid_ne_2018.pdf

In response to recent studies access to the recreational resources, green spaces and the historic environment will have greater importance in future planning³³. The NPPF suggests a range of areas that should be taken into account, including the provision of appropriate facilities for recreation that preserve the openness of the green belt.

The National Ecosystem Assessment and the Marmot Review, Fair Society, Healthy Lives, demonstrate the positive impact that nature has on mental and physical health and as a result the Government intends to establish a Green Infrastructure³⁴ Partnership with civil society to support the development of green infrastructure in England.

Improvements to the quality of the water environment and certain potential climate change impacts will present opportunities for an expanding tourist industry in the region³⁵.

4.4.3 Key Issues

The key sustainability issues arising from the baseline assessment for population and human health are:

- The need to ensure water supplies remain affordable especially for deprived or vulnerable communities.
- The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas.
- The need to ensure public awareness of drought conditions and importance of maintaining resilient, reliable public water supplies without the need for emergency drought measures.
- The need to ensure water quantity and quality is maintained for other users including tourists, recreational users and other users such as farmers.
- The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to recreation resources and the natural and historic environment.
- The need to accommodate an increasing population.
- The need to contribute towards maintaining sustainable economic growth in the region.
- Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and well-being and the economy.

4.5 Material Assets and Resource Use

4.5.1 Baseline

4.5.1.1 Water Use

Yorkshire Water

In 2018/19, Yorkshire Water abstracted and treated 1,300MI/d (million litres per day) of water for supply to customers, with leakage from the water distribution system reported as 289.8MI/d³⁶.

³³ Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper

³⁴ Green infrastructure is a term used to refer to the living network of green spaces, water and other environmental features in both urban and rural areas.

³⁵ Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report.

³⁶ Yorkshire Water Services Limited (2019) Annual Report and Financial Statements.
https://www.yorkshirewater.com/media/1819/734104_yws_arfs_2019_web-min.pdf

Northumbrian Water

Northumbrian Water supplies on average 680MI/d of potable water and 80MI/d of untreated water to customers across the North East. In 2018/19 Northumbrian Water's rates of leakage were 136.3MI/d³⁷.

Hartlepool Water

Hartlepool Water supplies on average 37MI/d to customers in the Hartlepool area³⁸. In 2018/19 rates of leakage were 4.59MI/d

4.5.1.2 Resource use and waste

The need for society to reduce the amount of waste it generates, by using materials more efficiently, and improving the management of waste that is produced, in order to achieve sustainable living, is realised more today than it was two decades ago. Landfill volumes in England³⁹ peaked in 2001/02 at 22.4 million metric tons, before declining in the following years. In 2018/19, this figure was 2.7 million tons attributed to increased recycling rates. Household recycling rates in England have climbed to almost 45% (from 11.2% in 2000), waste generated by businesses declined by 29% in the six years to 2009 and business recycling rates are above household recycling rates at 50%. Average recycling rates for 2018/19 in the North East were 36.4% and 42.1% in Yorkshire and the Humber, both lower than the average for England of 43.8%⁴⁰. However, East Riding of Yorkshire Council, within the WReN area, had the highest household waste recycling rate in England 2018/19 at 65% and has featured in the top three authorities for the past three years. In line with the widely adopted 'waste hierarchy', best practice for waste management is to reduce, re-use, recycle and recover, and only then should disposal (or storage) in landfill be considered.

Data on waste arisings is collected in a range of categories. The activities of the water industry contribute to construction, demolition and excavation waste, through construction of new infrastructure. The water industry also contributes to several waste streams through the operation of facilities. Waste streams include commercial and industrial waste (statistics include waste arisings from the power and utilities sector, which includes water supply and sewage treatment), and also hazardous wastes from industrial wastewater treatment. In 2016, it is estimated that the commercial and industrial sectors contributed over 32 million tonnes of waste in England, meanwhile the CDE sector (Construction, demolition and excavation) generated over 120 million tonnes, showing 4.7% and 3.0% increases, respectively, when compared to 2014 data⁴¹.

The Yorkshire and The Humber region is a major producer and consumer of energy. Total energy consumption in the region during 2017 was just over 12 million tonnes of oil (mtoe), approximately 9.6% of the total UK figure⁴². **Table 4.7** illustrates the proportion of energy consumption in both the North East and Yorkshire regions used for industry and commercial use is above the UK average. Energy consumption by type is consistent with national trends, with the majority coming from natural gas and petroleum. The renewable energy sector in both regions continues to grow with 11% of sites generating renewable energy in England (including offshore sources) located in Yorkshire and the Humber⁴³.

Table 4.7: Regional energy demand by sector (2017)

Energy demand by sector	Yorkshire and The Humber	North East	UK
Industry and Commercial	43.3%	42.3%	35.6%
Domestic	28.4%	31.1%	31.4%
Transport	26.8%	25.1%	30.2%

³⁷ Discover Water (2019) <https://discoverwater.co.uk/leaking-pipes>

³⁸ <https://www.anglianwater.co.uk/siteassets/household/about-us/wr-z-summaries.pdf>

³⁹ Collected by Local Authorities

⁴⁰ Defra (2019) Statistics on waste managed by local authorities in England in 2018/19

⁴¹ Defra (2020) UK Statistics on Waste

⁴² HM Treasury (2020) National Infrastructure Strategy

⁴³ Department for Business, Energy & Industrial Strategy (2018) Regional Renewable Statistics 2003-2018: Number of Sites

4.5.2 Future Baseline

The Government's National Infrastructure Strategy⁴⁴ (2020) outlines a legal commitment to decarbonise the economy by 2050, strategies to rebuild the economy following the COVID-19 pandemic and plans to 'level-up' UK cities and regional powerhouses. Plans for green-growth clusters in formerly industrial areas and investment via the Towns Fund could benefit the WReN region in terms of the economy, industry, resource usage and the built environment. The UK Government plans to accelerate the deployment of green technology through private sector investment in the retrofitting of existing stock, carbon capture and low-carbon hydrogen.

4.5.3 Key Issues

The key sustainability issues arising from the baseline assessment for Material Assets and Resource Use are:

- The need to minimise the consumption of resources, including water and energy.
- The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill.
- The need to continue to reduce leakage from the water supply system.
- Daily consumption of water is higher than the national average in the area and consequently there is a continued need to encourage more efficient water use.
- The need to support regional and national commitments to decarbonisation.

4.6 Water

4.6.1 Baseline

In the context of the Water Framework Directive (WFD), the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. The WReN region is made up of the Humber river basin district and the Northumbria river basin district.

The aquatic environment of the river basin districts has been characterised as part of the UK Government's reporting obligations to the EU under the WFD and this provides the most appropriate baseline reference⁴⁵.

The WFD brings together the planning processes of a range of other European Directives. These Directives establish protected areas to manage water, nutrients, chemicals, economically significant species, and wildlife – and have been brought into line with the planning timescales of the WFD. Although the UK has left the European Union, European Law and policy has formed the basis for UK environmental laws and contributed to the direction of UK policy in these areas for many years up to 30 January 2020. As such, the WFD is considered to remain a useful contextual frame for this baseline review.

4.6.1.1 Water Quality

Humber river basin district⁴⁶

The Humber river basin district covers an area of 26,100km² and is made up of 15 management catchments which have undergone varying levels of urbanisation and industrialisation and range from upland streams and fertile river valleys, to chalk aquifers. The waterbodies within the river basin district provide a diverse range of habitats and support species which are of both national and global importance.

⁴⁴ HM Treasury Infrastructure UK (2020). National Infrastructure Strategy
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/938539/NIS_Report_Web_Accessible.pdf

⁴⁵ Defra (2005) Water Framework Directive: Summary report of the characterisation, impacts and economics analyses required by Article 5, Humber River Basin District

⁴⁶ Environment Agency (2015) Part 1: Humber river basin direct river basin management plan

The number of water bodies in the Humber river basin district is presented in **Table 4.8**. The current status of the groundwater and surface water bodies in the Humber river basin district is presented in **Table 4.9** and **Table 4.10**.

Physical modifications, pollution from wastewater, and pollution from rural areas are reported as the most significant water management issues which affect water bodies within the Humber river basin district preventing them from achieving “Good” status.

Table 4.8: Number of water bodies in the Humber river basin district*

Water body categories	Natural	Artificial	Heavily modified	Total
Rivers, canals and surface water transfers	457	105	282	844
Lake	11	19	104	134
Coastal	0	0	2	2
Estuarine	1	2	4	7
Groundwater	51	0	0	51
Total	520	126	392	1038

*The Humber river basin district covers 26,100km² and includes a significant area beyond the WReN study area.

Table 4.9: Ecological and chemical 2015 classification for surface water in the Humber river basin district

No. of water bodies	Ecological status or potential				Chemical status		
	Bad	Poor	Moderate	Good	High	Fail	Good
987	32	136	671	148	0	32	955

Table 4.10: Chemical and quantitative 2015 classification for groundwaters in the Humber river basin district

No. of water bodies	Quantitative Status		Chemical Status	
	Bad	Poor	Fail	Good
51	13	38	25	26

Northumbria River Basin District⁴⁷

The Northumbria river basin district covers an area of 9,000km², extending from the Scottish border in the north through Northumbria to Stockton-upon-Tees in the south. It includes parts of Cumbria to the west and extends to North Sea to the east.

Physical modifications to water bodies, pollution, changes to flow, INNS and climate change are deemed to be the most significant threats to the district preventing them from achieving “Good” status.

⁴⁷ Environment Agency (2015) Part 1: Northumbria river basin district River Basin management plan

The number of water bodies in the Northumbria river basin district is presented in **Table 4.11**. The current status of the groundwater and surface water bodies in the Northumbria river basin district is presented in **Table 4.12** and **Table 4.13**.

Table 4.11: Number of water bodies in the Northumbria river basin district

Water body categories	Natural	Artificial	Heavily modified	Total
Rivers, canals and surface water transfers	222	2	91	315
Lake	9	10	26	45
Coastal	5	1	1	7
Estuarine	1	0	6	7
Groundwater	10	0	0	10
Total	247	13	124	384

Table 4.12: Ecological and chemical 2015 classification for surface water in the Northumbria river basin district

No. of water bodies	Ecological status or potential				Chemical status		
	Bad	Poor	Moderate	Good	High	Fail	Good
374	13	62	199	98	2	29	345

Table 4.13: Chemical and quantitative 2015 classification for groundwaters in the Northumbria river basin district

No. of water bodies	Quantitative Status		Chemical Status	
	Bad	Poor	Fail	Good
10	1	9	7	3

River basin management challenges

The RBMPs for the Humber, and Northumbria river basin districts highlight significant water management issues which prevent the sustainable management of water within each river basin as presented in **Table 4.14**. In the Northumbria river basin district the most common threat to water quality were physical modifications and pollution from chemicals. For the Humber river basin district pollution from rural areas posed the greatest threat to waterbodies achieving good status.

Table 4.14: Water management issues

Reason for not achieving good status	Percentage of waterbodies affected	
	Northumbria river basin district	Humber river basin district
Abstraction and flow	3.8%	3.3%
Chemicals	25.7%	8.8%
Biochemical oxygen demand	0.4%	1.9%
Dissolved oxygen	1.9%	6.0%
Ammonia	4.3%	8.8%
Fine sediment	6.7%	5.3%
INNS	0.1%	0.2%
Nitrate	1.3%	0.1%
Phosphate	19.4%	38.4%
Physical Modification	36.4%	27.2%

4.6.1.2 Flood Risk

Flooding can result from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources. Across the country, the Government budgeted £2.3bn on 1,500 flood defence schemes between 2015 -2021.

Northumbria river basin district⁴⁸

Almost 9,200 properties in the Northumbria river basin district receive direct flood warnings. The Northumbrian river basin comprises of the following; Northumberland rivers management catchment, River Tyne management catchment, and the River Wear and River Tees management catchments.

In the north of the river basin district there are a number of areas classified as 'rapid response areas' as river levels rise quickly after rainfall. Along the coast, there is a risk of tidal flooding around North Shields and Newcastle. Urban areas are susceptible to surface water and sewer flooding, and there has been major flooding in the past in Newcastle, Gateshead and North and South Tyneside. In the east of the catchments, river flows also combine with tidal flood risk, which affects small areas of Sunderland and Teesside.

Areas with flood defence schemes already in place include Morpeth, Yarm, South Church, Ponteland and Hexham. Further schemes are ongoing or planned, such as in Stockton, Gosforth, Blyth, Team Valley, Port Clarence and Guisborough. On the coast, defences include the recently completed Redcar scheme, Port Clarence on the River Tees, and in Warkworth defences protect parts of the town from a combination of river and tidal flood risk.

⁴⁸ Environment Agency (2016) Flood risk management plan: Northumbria river basin district summary
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/507123/LIT_10200_NORTHUMBRIA_FR_MP_SUMMARY_DOCUMENT.pdf

Humber river basin district⁴⁹

Of the 11.7 million people living in the river basin district, there are almost 78,000 people at high risk of surface water flooding and over 58,000 people at high risk of flooding from rivers and the sea. Nearly 300,000 properties in the Humber river basin district receive direct flood warnings.

Parts of the upland catchments are “rapid response areas” which pose a large risk to communities living nearby. There is a considerable extent of lowland in the river basin district, running north to south. Many of these areas are only a few metres above sea level, forming an extensive area of floodplain and wetland areas. The Humber Estuary has a large tidal range and people living on the coast and by the estuary are at risk from tidal flooding, as shown by the 2013 tidal surge. The coastline is prone to erosion from the sea along its entire length and in north Lincolnshire, sand dune systems and coastal have to be defended to prevent inland areas from flooding. Yorkshire communities identified by the flood management plan as being at risk from flooding include Calderdale, York and Hull.

Coastal and tidal defences already protect many thousands of properties, including at Grimsby Docks, in Hull city and in towns along the Humber Estuary. The total length of coastal and tidal defences across the river basin district is approximately 2,100km. Flooding from culverted rivers (rivers that have been redirected underground through tunnels) can be a large problem in the Humber. The Environment Agency (EA) and lead local flood authorities (LLFAs) inspect, clear and repair culverts, and take enforcement action in locations where flooding can have the most significant impact.

4.6.1.3 Resource availability

WReN published an Initial Resources Position document in March 2020 summarising the supply demand status for water resource zones across the region. Based on previous WRMP data it was found that all WRZs were in surplus. This information has since been updated in February 2021 in anticipation of PR24 water company WRMPs. These updates indicate a number of material areas that will influence our supply-demand balance compared to previous in some zones. The potential change in resource position is outlined in **Table 4.15** below.

Table 4.15: Comparison of water resource zone supply-demand balance position⁵⁰

WRZ	Water Company	Previous Position (Mar 2020 submission)	Change in status at Feb 2021
Hartlepool	Hartlepool Water	Significant surplus	Broadly stable
Berwick	Northumbrian Water	Surplus	Broadly stable, subject to environmental destination
Kielder	Northumbrian Water	Significant surplus	Broadly stable
Yorkshire East	Yorkshire Water	Surplus	Broadly stable
Yorkshire Grid	Yorkshire Water	Surplus	Deteriorating surplus / risk of deficit

Figure B2 (Appendix B) maps water resource availability across the WReN region.

⁴⁹ Environment Agency (2016) Flood risk management plan: Humber river basin district summary
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/507114/LIT_10204_HUMBER_FRMP_SUMMARY_DOCUMENT.pdf

⁵⁰ WReN (2021) Our Revised Water Resources Position Statement

4.6.2 Future Baseline

4.6.2.1 Water Quality

The Water Framework Directive sets a target of aiming to achieve at least 'good status' in all waterbodies by 2015. However, provided that certain conditions are satisfied, in some cases the achievement of good status may be delayed until 2021 or 2027.

4.6.2.2 Flood Risk

The NPPF states that inappropriate development in areas at risk of flooding (in Flood Zone 1⁵¹, Flood Zone 2⁵², Flood Zone 3a⁵³ or Flood Zone 3b - the functional floodplain); should be avoided by directing development away from areas at highest risk (whether existing or future). The NPPF requires that where development is necessary, it should be made safe without increasing flood risk elsewhere, as defined in the Technical Guidance to the NPPF⁵⁴. The NPPF requires the application of a sequential, risk-based approach (operated through Strategic Flood Risk Assessment) to the location of development to avoid where possible flood risk to people and property and to manage any residual risk, taking account of the impacts of current and future climate change. Following application of the Sequential Test, if it is not possible, consistent with wider sustainability objectives, for the development to be located in zones with a lower probability of flooding, the Exception Test can be applied if appropriate. This includes development for water-compatible uses (e.g. water transmission infrastructure and pumping stations) and essential infrastructure (e.g. water treatment works that need to remain operational in times of flood). The Government's 25 year Environment Plan looks to strengthen the relevant protections in the NPPF and, in addition, focus on using more natural flood management solutions, increase the uptake of sustainable drainage systems and improve resilience and recovery times of at risk properties.

The Environment Agency has produced 77 Catchment Flood Risk Plans (CFMPs) for England and Wales. Through the CFMPs, inland flood risk across all of England and Wales has been assessed for the first time. The CFMP considers all types of inland flooding, from rivers, ground water, surface water and tidal flooding. The role of CFMPs is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. This is essential if for effective investment decisions for the future and to help prepare ourselves effectively for the impact of drought events as a result of climate change. The CFMPs will help target the areas that are at greatest risk and provide information on the likely future flood risk, which will help establish the future baseline. For the WReN region, the following CFMPs have been produced:

- River Aire
- River Calder
- River Derwent
- River Don
- Esk and Coastal Streams
- Grimsby and Ancholme
- Hull & Coastal Streams
- Louth Coastal
- River Ouse
- River Trent
- North East Northumberland
- River Tees
- River Tyne

⁵¹ Low probability of river or sea flooding (<0.1%) which has critical drainage problems

⁵² Medium probability of river (1%-0.1%) or sea flooding (0.5%-0.1%)

⁵³ High probability of river (>1%) or sea flooding (>0.5%)

⁵⁴ Ministry of Housing, Communities & Local Government (2014) Flood risk and coastal change. Accessed at <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

- River Wansbeck and Blyth
- River Wear.

4.6.2.3 Minimising and adapting to the impacts of climate change:

The UK Climate Change Risk Assessment (CCRA) 2017 Evidence Report⁵⁵ draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Findings of the assessment include:

- Increasing pressure on the UK's water resources due to changes in hydrological conditions, population growth and regulatory requirements to maintain good ecological status
- Major supply-demand deficits were identified for five river basins including the Humber river basin district
- Increases in water demand for irrigation of crops
- Lower summer river flows across the UK due to warming and drying conditions
- An increase in precipitation in winter months due to a combination of greater depths and more frequent heavy rainfall events suggesting runoff with potential negative impacts on flood risk and sewer overflows in urban environments
- Flash-flooding associated releases from combine sewer overflows (CSO) could in turn increase associated illnesses at the coast due to the varying microbial pathogens in the marine environment.

4.6.3 Key Issues

The key issues arising from the baseline assessment for water are:

- The need to further improve the quality of the region's river, estuarine and coastal waters taking into account WFD status targets.
- The need to maintain the quantity and quality of groundwater resources taking into account WFD status targets.
- The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change impacts on surface waters and groundwaters.
- The need to ensure sustainable abstraction to protect the water environment.
- The need to ensure that people understand the value of water.
- The need to reduce and manage flood risk.

4.7 Soil, Geology and Land-use

4.7.1 Baseline

4.7.1.1 Geology

There is a great diversity in the composition of the geology across the region. The geology of North Yorkshire comprises a range of sedimentary rocks that slope gently to the east so that the oldest rocks are present in the west of the County and the youngest in the east. The Carboniferous Limestone and the overlying Upper Carboniferous Millstone Grit dominate the exposure in the west and give rise to the characteristic upland countryside of the Yorkshire Dales and the North Pennines. There is a distinctive difference in the two habitats that these rock types support; with limestone giving rise to calcareous soils whilst shales and sandstones of the Millstone Grit giving rise to acidic soils and large areas of upland grassland and bog. The South Yorkshire area is underlain by rocks of Carboniferous age which are tilted gently to the south-east so that the oldest part of the succession occurs in the west. The moors

⁵⁵ Defra (2016) The UK Climate Change Risk Assessment 2017 Evidence Report

to the west of Sheffield are formed in the shales and hard coarse-grained sandstone beds of the Millstone Grit. The West Yorkshire area is underlain by rocks of Carboniferous age which are tilted gently to the south-east so that the oldest part of the succession occurs in the west. The moors to the west of Bradford and Calderdale are formed in the shales and hard coarse-grained sandstone beds of the Millstone Grit. The geology of the East Riding of Yorkshire represents a relatively simple arrangement with the older, marine clays, limestone and sandstones of Jurassic age occurring in the west of the County and younger Cretaceous rocks in the east. The Holderness cliffs, composed of silts and clays, stretch for 60km along the coastal side of the study area. This area of coastline is highly susceptible to erosion through repeated landslide activity and the cliffs are rapidly receding at a rate of 1.8 metres per year⁵⁶. The topography of the area is dominated by the Chalk Wolds which are a crescent shaped series of hills stretching from the coast north of Bridlington to the Humber Bridge.

In Northumberland generally there are the carboniferous limestones to the south and east with older igneous rock formations to the north and west. Surrounding the Tees there is impervious bedrock of Carboniferous age composed of alternating limestones, shale, sandstones and thin coal seams of upland soils. Coal Measures are exposed over a comparatively small part of the middle catchment but underlie the Magnesian Limestone towards the Durham Coast. The underlying geology of the Wear is of Carboniferous age. Coal Measures, Millstone Grit, Upper and Lower Limestone dominate the geology of the upper Wear catchment. While Coal Measures and Magnesian Limestone are predominant in the middle and lower reaches and Coastal Streams area. Rocks from the carboniferous period lie entirely under the Tyne area. This carboniferous strata dips eastwards, with the oldest rocks located in the northwest in the River North Tyne

The variety of underlying geology in the region is reflected in the region's soils, the agricultural value of which varies across the region. Arable and horticultural land is the predominant agricultural land use type throughout Yorkshire, with the majority of this land primarily located from the centre of the region, throughout the Peak District and Yorkshire Dales. The soil in the Yorkshire dales is primarily made up of upland peat soils and thinner calcareous soils. Additionally, there are pockets of dense shrub heathland present in the North Yorkshire Moors and Peak District. Throughout Northumbria river basin district there are a variety of soils. In general, clay based soils dominate the area, with peaty soils in the uplands.

The Agricultural Land Classification System developed by Defra provides a method for assessing the quality of farmland, principally for the use in planning. The system divides the quality of land into five categories as well as non-agricultural and urban; the regional data is shown in **Figure B3** (Appendix B).

The 'best and most versatile land' is generally defined as the agricultural land which falls into Grades 1, 2 and 3a. The 'best and most versatile' quality of the agricultural land is largely found to the east of the region, in the Vale of York, north of Kingston upon Hull and along the Northumberland Coast.

4.7.2 Future Baseline

One of the core planning principles of the National Policy Planning Framework (NPPF) is to encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value. The NPPF also places great importance with respect to Green Belt policy, the aim of which is to prevent urban sprawl by keeping land permanently open. Green Belt serves five purposes: to check the unrestricted sprawl of large built-up areas; to prevent neighbouring towns merging into one another; to assist in safeguarding the countryside from encroachment; to preserve the setting and special character of historic towns; and to assist in urban regeneration, by encouraging the recycling of derelict and other urban land. Although the NPPF promotes a presumption in favour of sustainable development, this does not apply where proposed developments may affect European or other designated sites covered by specific policies.

The 25 Year Environment Plan (2018) runs alongside the Industrial Strategy (2017) and outlines the government's approach to safeguarding the environment and sustainable management of the economy. It introduces reforms to incentivised land management following Brexit. The plan details the

⁵⁶ Humber Estuary Coastal Authorities Group (2010) Flamborough Head to Gibraltar Point Shoreline Management Plan

Environmental Land Management scheme (ELMs), evolution of the Common Agricultural Policy (CAP). The ELMs includes 3 new schemes designed to support the rural economy and the government's commitment to net zero emissions by 2050⁵⁷. The first of these schemes, the Sustainable Farming Incentive, will pay farmers to manage their land in an environmentally sustainable way. The scheme designates standards based on a feature e.g. hedgerows or grassland, and contains a series of actions required to meet the criteria. The scheme is currently being piloted but is due to launch in 2022. The Local Nature Recovery Scheme is intended to encourage collaboration between farmers and will pay for actions that support nature recovery which meet local environmental priorities. The Local Nature Recovery Scheme is due to launch in 2024. Finally, the Landscape Recovery scheme support long-term projects to recover landscape and ecosystems. Examples of projects include the restoration of peatland and salt marshes, large-scale tree planting and the re-wilding of landscapes where appropriate. Again, this scheme is due to come online in 2024.

4.7.3 Key Issues

The key sustainability issues arising from the baseline assessment for soil, geology and land use are:

- The need to protect geological features of importance and maintain and enhance soil function and health.
- The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources).
- The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region.

4.8 Air and Climate

4.8.1 Baseline

The schemes in the Regional Plan may involve construction, operation of abstraction and treatment operations in new locations and changes to the operation of such processes in existing locations. Therefore, there is the potential for adverse effects on air quality and climate through emissions associated with construction (on site and transport) or through the operation of the schemes.

The 2018 UK Climate Projections (UKCP18) are broadly consistent with UKCP09 and estimate that across England summers are likely to become drier and winters wetter⁵⁸. In northern and upland areas, an increase in the number of extreme rainfall events is estimated, as is the frequency of dry spells (over ten consecutive days without rain).

Future climate change will influence processes within the hydrological cycle such as runoff and evapotranspiration.

The UK Climate Change Risk Assessment (CCRA) 2017 Evidence Report⁵⁹ indicates an urgent need for early adaptation action (i.e. within the next 5 years) in managing water resources, particularly in areas with increasing water scarcity.

4.8.1.1 Local Air Quality

Options in the Regional Plan may require increased pumping of water (carbon emissions) and the construction of new infrastructure. Therefore, there is the potential for negative effects on air quality through emissions associated with construction requirements or through the operation of the options.

The air quality baseline situation can be best described through reference to information produced by the local authorities in the WReN region that have declared Air Quality Management Areas (AQMA). These AQMAs are shown in **Figure B4** (Appendix B). A local authority declares an AQMA when UK National air quality objectives are unlikely to be met. The majority of the AQMAs in the UK have been

⁵⁷ Defra (2021) Environmental Land Management scheme: overview

⁵⁸ <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-fact-sheet-derived-projections.pdf>

⁵⁹ Defra (2016) The UK Climate Change Risk Assessment 2017 Evidence Report

declared because of emissions from road transport. Reference to AQMAs will be made when considering any adverse on air quality of the Regional Plan options.

4.8.1.2 Climate

Climate monitoring and risk assessments have improved significantly over the last two decades but there are still limits to the understanding of future climate change impacts. Whatever happens to future 'greenhouse gas' emissions, there is already a certain amount of global warming "locked in" due to historic emissions due to the inertia and lags in the global climate system. Mitigation through reduction in greenhouse gas emissions will contribute to risk reduction over the long term (100 years). Adaptation is however needing to start now in order to reduce the costs and damages of potential impacts and to take advantage of opportunities that result from a changing climate.

The 2018 UK Climate Projections (UKCP18) are broadly consistent with UKCP09 and estimate that across England summers are likely to become drier and winters wetter⁶⁰. In northern and upland areas, an increase in the number of extreme rainfall events is estimated, as is the frequency of dry spells (over ten consecutive days without rain). The predominant greenhouse gas of interest is carbon dioxide (CO₂). National and regional CO₂ emissions totals and how they are apportioned to their source categories are provided in **Table 4.16**.

Table 4.16: UK CO₂ emissions (2018)

Region	Total emissions (million tonnes CO ₂)	Per capita emissions (tonnes CO ₂ per capita)	Percentage Contribution by Source Sector		
			Industry & Commercial	Domestic	Transport
Yorkshire & The Humber	35.8	6.5	47.2%	23.1%	30.4%
North East	15.1	5.7	51.6%	26.4%	29.8%
<i>UK</i>	<i>344.8</i>	<i>5.2</i>	<i>38.6%</i>	<i>27.9%</i>	<i>36.7%</i>

Source: Department of Energy and Climate Change (DECC) (2020)⁶¹

There has been an 55% decrease in total emissions between 2005-2018 in the North East region compared with the UK average of 35% decrease.

Future climate change will influence processes within the hydrological cycle such as runoff and evapotranspiration. The potential impact of climate change on the regions water resources in the future is summarised in **Table 4.17**.

⁶⁰ <https://www.metoffice.gov.uk/binaries/content/assets/metofficegovuk/pdf/research/ukcp/ukcp18-fact-sheet-derived-projections.pdf>

⁶¹ DECC (2020) Local authority carbon dioxide emissions estimates 2018, Statistical Release

Table 4.17: Impact of Climate Change on Water Resources

Sector		Impact
Water Resources	(i) water supply	Reduction in water source yields, either in total or at certain times of the year. Increased evaporation losses from surface water stores. Increased sediment and pollution runoff into watercourses caused by changes in farm management practices adopted to adapt to climate change. Increased risk of algal blooms and pollution in reservoirs.
	(ii) water demand	Increase in demand in summer months leading to increase in average and peak requirements. Increased pressure on treatment and distribution system.
Flood management		Increased riverine flood risk and storm occurrence due to increased rainfall, leading to increased risk of flooding to water resource assets and adverse temporary effects on raw water quality.
Water quality management		Lowered water quality in lowland rivers, with implications for in-stream ecosystems and water abstractions. Altered potential for polluting incidents.
Navigation		Lower summer flows leading to reduced navigation opportunities in rivers and canals.
Aquatic ecosystems		Altered habitat potential, with species at their environmental margins most affected.
Water-based recreation		Impacts through changes in river flows and water quality.

4.8.1.3 Adaptation to Climate Change

The UK Climate Change Risk Assessment (CCRA) 2017 Evidence Report⁶² draws together and interprets the evidence gathered by CCRA regarding current and future threats and opportunities for the UK posed by the impacts of climate change up until 2100. Overall, the findings of the CCRA indicate that the greatest need for early adaptation action (i.e. within the next 5 years) is in the following areas:

- Flood and coastal erosion risk management
- Specific aspects of natural ecosystems, including managing productivity and biodiversity (the management of forest pests and diseases, low summer river flows and the movement of plants and animal species are all highlighted as high priorities for action)
- Managing water resources, particularly in areas with increasing water scarcity
- Overheating of buildings and infrastructure in the urban environment
- Health risks associated with heatwaves and other risks that may affect the NHS
- Opportunities for the UK economy, particularly to develop climate adaptation products and services.

4.8.2 Future Baseline

Government and international targets indicate significant cuts in greenhouse gas emissions will take place by 2027. The UK met the first and second carbon budgets with headrooms of 36 and 384 MtCO₂e respectively and is currently projected to meet the third carbon budget with a headroom of around 26 MtCO₂e (until 2022)⁶³. Objectives are being achieved for many air pollutants (lead, benzene, 1,3-butadiene and carbon monoxide (CO)). However, measurements show that long-term reducing trends

⁶² Defra (2016) The UK Climate Change Risk Assessment 2017 Evidence Report

⁶³ DECC (2020) Updated energy and emissions projections 2019

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/501292/eepReport2015_160205.pdf

for NO₂⁶⁴ and PM10⁶⁵ are flattening or even reversing at a number of locations, despite current policy measures. For example, emissions of PM10 and PM2.5 have been relatively stable since 2009. The Government's aim is to reduce emissions of PM2.5 against the 2005 baseline by 30% by 2020, and 46% by 2030, emissions of NO₂ against the 2005 baseline by 55% by 2020 and 73% by 2030 and to reduce emissions of sulphur dioxide against the 2005 baseline by 59% by 2020, increasing to 88% by 2030.⁶⁶

The CCRA considered more than 700 risks and selected 100 risks for detailed review. A selection of threats and opportunities identified under the 'medium scenario' are summarised in **Figure 4.1**.

4.8.3 Key Issues

The key sustainability issue arising from the baseline assessment for air and climate is:

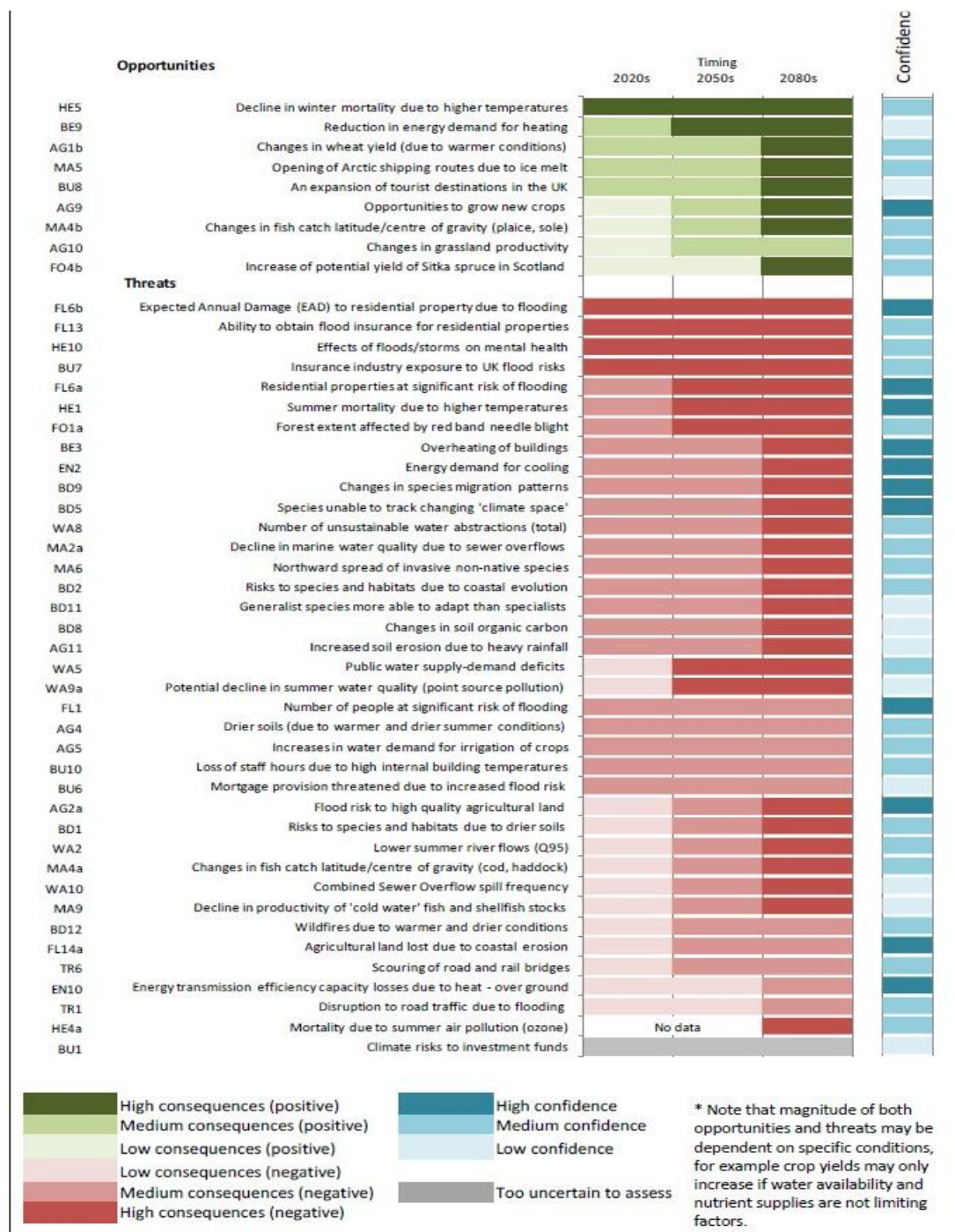
- The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards.
- The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term.
- The need to adapt to the impacts of climate change for example through, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change.

⁶⁴ Nitrogen dioxide

⁶⁵ Particulates with a diameter of 10µm or less

⁶⁶ Defra (2019), Clean Air Strategy 2019

Figure 4.1: Summary of natural environment impacts with an indication of direction, magnitude and confidence (CCRA, 2012)



4.9 Archaeology and Cultural Heritage

4.9.1 Baseline

The WReN area includes four internationally recognised World Heritage Sites⁶⁷: Saltaire; Studley Royal Park including the ruins of Fountains Abbey; the Frontiers of the Roman Empire (Hadrian's Wall) and Durham Castle and Cathedral.

There are approximately 3,998 Scheduled Monuments (SMs) located within the WReN area.

Options in the Regional Plan could affect historic landscape character and historic structures associated with the water environment, or the historical context of their setting. Archaeological remains are also sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices.

Registered Parks and Gardens also make up part of the UK's cultural heritage of national importance. There are approximately 183 sites designated as such in the WReN region. Nationally important archaeological sites are statutorily protected as designated heritage assets. **Table 4.18** shows the designated heritage asset count nationally, regionally and within the WReN area. World Heritage Sites, Registered Historic Battlefields and Registered Parks and Gardens are shown in **Figure B5** (Appendix B).

Table 4.18: Designated Heritage Assets

Asset	England	WReN Area
World Heritage Site	20	4
Scheduled Monuments	19,905	3,998
Listed Buildings	379,107	42,927
Registered Parks and Gardens	1695	183
Registered Historic Battlefields	47	13
Protected Historic Wrecks	54	3

Source: Historic England: Heritage counts 2021 (*designated assets were identified from GIS datasets available from Historic England at <http://services.english-heritage.org.uk/NMRDataDownload/>)

Historic England has been collecting data on buildings at risk for more than a decade. The National Heritage at Risk Register systematically checks the condition of problem buildings, initially focused on buildings at risk, but now adapted to serve other types of heritage asset. Nationally, 766 (3.4%) out of a total of 22,485 grade I and II* listed buildings (excluding places of worship) are on the Register. In the North East & Yorkshire the percentage is 5.1% (128 listed secular buildings)⁶⁸. The North East & Yorkshire also has two grade I or II* listed secular buildings which form part of a listed place of worship.

Nationally, in 2020 181 entries were removed from the Register for positive reasons, but 216 were added. 2020 saw an increase in the number of places of worship added to the register⁶⁹. Possible explanations for this trend include the increase in metal theft, a reduction in the number of local people able to do maintenance, or lack of understanding about how valuable it is to do small maintenance and repair jobs to stave off decay.

There are a number of floodplains within the WReN area which are either known or suspected to be of high importance for waterlogged archaeology. Such evidence includes both material (wooden artefacts and structures such as trackways) and evidence of past environmental change from the deposits themselves.

⁶⁷ World Heritage Sites are places of international importance for the conservation of mankind's cultural and natural heritage. The World Heritage List was set up by the World Heritage Convention, established by UNESCO in 1972. www.english-heritage.org.uk

⁶⁸ Heritage at Risk Register- North East and Yorkshire (2020) Historic England <https://historicengland.org.uk/images-books/publications/har-2020-registers/ne-yo-har-register2020/>

⁶⁹ Heritage at Risk: Latest Findings (2020) Historic England <https://historicengland.org.uk/advice/heritage-at-risk/findings/>

The waterlogged conditions that preserve these remains may be rain-fed or groundwater fed. If the latter, then clearly abstraction levels can be a critical factor in maintaining conditions in which preservation of the remains is viable. In addition, there are waterlogged deposits that are specifically associated with chalk, such as springs and their intimately associated wetlands which again can contain important archaeological information, especially palaeo-environmental evidence.

4.9.2 Future Baseline

The NPPF was introduced in 2012 to replace the Planning Policy Statements. The NPPF aimed to make the planning system less complex and more accessible, and changed the emphasis on planning to have a presumption in favour of development. However, core planning principles include those aiming to protect heritage assets, including “conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations”⁷⁰. Recent and ongoing national economic difficulties may have a negative effect on removing heritage assets from the heritage at risk register. Climate change could have variable impacts on heritage assets in the future. Some types of assets and landscapes have already experienced and survived significant climatic changes in the past and may demonstrate considerable resilience in the face of future climate change. However, many more historic assets are potentially at risk from the direct impacts of future climate change⁷¹.

4.9.3 Key Issues

The key sustainability issue arising from the baseline assessment for archaeology and cultural heritage is:

- The need to conserve or enhance sites of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment.

4.10 Landscape and Visual Amenity

4.10.1 Baseline

The landscape character network⁷² defines landscape character as 'a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. Some landscapes are special because they have a particular amenity value, such as those designated as Areas of Outstanding Natural Beauty (AONB). Others may have an intrinsic value as good examples or be the only remaining examples of a particular landscape type. Some landscapes are more sensitive to development whereas others have a greater capacity to accommodate development. Assessments of landscape character and landscape sensitivity enable decisions to be made about the most suitable location of development to minimise impacts on landscapes.

4.10.1.1 Nationally Designated Sites

There are four National Parks in the WReN area which are protected by national legislation and water companies also have a statutory duty to have regard to the protection and conservation of national parks in carrying out their functions as a water undertaker. These parks are the Peak District, Yorkshire Dales, North York Moors and Northumberland.

AONBs are defined as ‘precious landscapes whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them’⁷³. They are designated under the National Parks and Access to the Countryside Act, 1949, strengthened by the Countryside and Rights of Way Act, 2000. The primary purpose of the AONB is ‘to conserve and enhance the natural beauty of the landscape’. As outlined in **Table 4.19**, there are five AONB within the WReN area (Howardian Hills, Nidderdale, Forest of Bowland, North Pennines and Northumberland Coast). The North Pennines

⁷⁰ CLG (2012) National Planning Policy Framework, Communities and Local Government.

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

⁷¹ English Heritage, now known as Historic England, (2010) Climate Change and the Historic Environment

⁷² www.landscapecharacter.org.uk, accessed March 2021

⁷³ Accessed at www.landscapecharacter.org.uk, accessed March 2021

AONB has been awarded the UNESCO-backed status of 'European Geopark' (the first in Britain) in recognition of the area's world class earth heritage and the efforts being made to conserve and interpret it. Each of these AONBs has a Management Plan describing the special qualities of the area which contribute to the national significance of the landscape, identifies major trends and opportunities in the area and presents a 5-year programme of actions from 2019-2024.

Figure B6 (Appendix B) shows the Landscape Designations across the SEA study area.

Table 4.19: AONBs within the WReN area

Site	WRZ	Key Characteristics
Howardian Hills	Grid SW; East GW	<p>Jurassic limestone creating distinctive character.</p> <p>In effect, the irregular 180m ridges of the Howardian Hills are a southern extension of the rocks of the North York Moors.</p> <p>Notably famous for a number of fine country houses, whose parklands are an intrinsic part of the landscape value</p>
Nidderdale	Grid SW	<p>Includes the wooded dales of the Washburn, Laver, Burn and dale of Nidd itself.</p> <p>Landscape is dominated by its millstone grit geology.</p> <p>Glaciation and differential resistance to weathering of the sand, shale and gritstones produce distinctive features.</p>
The North Pennines	Kielder	<p>Landscape contains many habitats of exceptional conservation value, including blanket bog, upland heath, species-rich hay meadows, oak and ash woodlands, juniper scrub, flushes and springs and unimproved and heavy-metal rich grasslands. It contains flowering plants on the calcareous grasslands of Teesdale which are unique in the UK.</p> <p>Internationally important numbers of birds, including 10,000 pairs of breeding waders and 80% of England's black grouse, breed and feed on the open moors and adjacent grasslands.</p> <p>The AONB includes parts of the Pennine Dales Environmentally Sensitive Area</p>
Forest of Bowland	Grid SW	<p>Internationally important landscape of heather moorland and blanket bog; Area host to rare bird species and important grouse/sheep populations; Majority of land is privately owned and used for agricultural purposes.</p>
Northumberland and Coast	Berwick and Kielder	<p>Landscape is of environmental importance and includes dune grassland, rocky shores, inlets and bays, intertidal sand and mud flats, migratory and winter wildfowl and waders, breeding seabirds, Whin grasslands and mixed farms that support a range of farmland wildlife and high tide roosts etc.</p>

4.10.2 Future Baseline

The NPPF highlights the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it. The NPPF states that great weight should be given to conserving landscape and scenic beauty in National Parks and AONBs, which have the highest status of protection. It identifies that planning permission should be refused for major developments in these designated areas except in exceptional circumstances and where it can be demonstrated they are in the public interest.

4.10.3 Key Issues

The key sustainability issue arising from the baseline assessment for landscape and visual amenity is:

- The need to protect and improve the natural beauty of the region's National Parks, AONBs, and other areas of natural beauty.
- It is envisaged that landscape and designated sites will be maintained and enhanced for the enjoyment of the public.

4.11 Inter-relationships

It is noted that there are inter-relationships between SEA topics. Inter-relationships that result in changes to individual effects are considered through the assessment of synergistic effects.

5 SEA Objectives and Proposed Framework

5.1 Strategic Environmental Assessment

SEA is a statutory requirement under the Environmental Assessment of Plans and Programmes Regulations 2004 ('the SEA Regulations') requiring the assessment of effects of certain plans and programmes on the environment. The objective of SEA is to:

'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development'.

The SEA Regulations requires preparation of an Environmental Report in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and geographical scope of the plan or programme, are identified, described and evaluated.

The following SEA topic areas are derived from the SEA Regulations and the ODPM Practical Guide (see Section 2.3) and will be considered as criteria for consideration in this assessment:

- Biodiversity, Flora and Fauna;
- Population and Human Health;
- Material Assets and Resource Use;
- Water;
- Soil, Geology and Land Use;
- Air and Climate;
- Archaeology and Cultural Heritage; and
- Landscape and Visual Amenity.

Any inter relationships between SEA topics will also be identified, assessed and reported.

5.2 Overview of Approach

There are essentially two main approaches to assessing environmental effects through SEA:

- a) an objectives-led assessment; and
- b) a criteria-led assessment (also known as a baseline-led assessment).

An objectives-led approach has been the approach adopted for SEA of WRMPs and is also the approach recommended by the ODPM Practical Guide. This section outlines the draft SEA objectives and proposed assessment framework that will be used to identify the environmental and social effects of the options identified in the Regional Plan.

Assessment objectives have been developed based on:

- The key policy messages, social and environmental protection objectives identified in the review of policies, other plans and programmes (see Section 3). It is important that the assessment takes these objectives into account as this will help it to highlight any area where the Regional Plan may help or hinder the achievement of the objectives of other plans (e.g. at local, national and international level).
- The current state of the environment in the area under consideration for the SEA (see Section 4) and the key environmental issues identified.

Draft SEA objectives are set out in **Table 5.1** alongside the key messages identified from the review of policies, plans and programmes and the key issues highlighted from the review of baseline information.

As well as the overall SEA objectives, a number of key questions have been developed for each SEA topic. These key 'indicator' questions will be used as prompts in the assessments to help ensure

consistent and robust assessment of these SEA topic areas. These key questions will prompt the assessment and ensure it considers all the relevant aspects.

The SEA objectives and indicator questions have been developed with regard to the SRO SEA objectives set out in Table 6.1 of the ACWG Strategic Environmental Assessment: Core Objective Identification report (see Section 2.3.1).

The following sections describe how WReN will use the SEA objectives set out in **Table 5.1** in the assessment of the environmental effects of the options, programmes and the preferred Regional Plan. These SEA objectives are intended to reflect changes that contribute to sustainability. By assessing each option against the objectives, it is more apparent where there might be adverse effects and where options could be developed to provide beneficial effects.

Table 5.1: SEA Objectives and Assessment Approach

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
Biodiversity, flora and fauna	<ul style="list-style-type: none"> • Conservation and enhancement of the natural environment and of biodiversity, particularly internationally and nationally designated sites and NERC Act priority habitats and species, whilst taking into account future climate change. • Promote a catchment-wide approach to water use to ensure better protection of biodiversity. • To achieve favourable condition for priority habitats and species in particular designated sites. • Avoidance of activities likely to cause irreversible damage to natural heritage. • Support well-functioning ecosystems, respect environmental limits and capacities, and maintain/enhance coherent ecological networks, including provision for fish passage and connectivity for migratory/mobile species. • Strengthen the connections between people and nature and realise the value of biodiversity. • Protection, conservation and enhancement of natural capital. 	<ul style="list-style-type: none"> • The need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation. • The need to avoid activities likely to cause irreversible damage to natural heritage. • The need to take opportunities to improve connectivity between fragmented habitats. • The need to control the spread of Invasive Non-Native Species (INNS). • The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services. 	<ul style="list-style-type: none"> • To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity within the WReN region. • To provide opportunities for habitat creation or restoration and a net benefit/gain for biodiversity. • To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy. • To avoid introducing or spreading INNS. 	<ul style="list-style-type: none"> • Will it avoid damage to aquatic, transitional and terrestrial species and habitats including fish populations (particularly migratory fish)? • Will it enhance aquatic, transitional and terrestrial species and habitats? • Will it protect the most important sites for nature conservation? • Will it affect HRA compliance? • Is the option likely to affect ancient woodland? • Will the option affect a priority habitat on the priority habitat inventory? • Are there any opportunities for habitat creation or restoration and a net benefit/gain for biodiversity? • Will the option contribute to the loss or gain in habitat connectivity? • Will it ensure the sustainable management of natural habitats, taking into account climate change adaptability? • Will it affect WFD compliance e.g. good ecological potential/status?

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>Ecosystem services from natural capital contributes to the economy and therefore should be protected and, where possible, enhanced.</p> <ul style="list-style-type: none"> • Avoidance of activities likely to cause the spread of Invasive Non-Native Species (INNS) • A need to protect the green infrastructure network. 			<ul style="list-style-type: none"> • Does it protect, conserve and enhance biodiversity natural capital and the ecosystem services the natural capital provides? • Is there a possibility for INNS to be spread/ introduced? • Is there an opportunity to improve biodiversity value through removal of INNS?
Population and human health	<ul style="list-style-type: none"> • Water resources play an important role in supporting the health and recreational needs of local communities. • To ensure all communities have a clean, safe and attractive environment in which people can take pride. • To ensure secure, safe, reliable, sustainable and affordable supplies of water are provided. • Access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and well-being of communities. • Promotion of healthy communities and protection from risks to health and wellbeing. • Promotion of a sustainable economy supported by universal 	<ul style="list-style-type: none"> • The need to ensure water supplies remain affordable especially for deprived or vulnerable communities • The need to ensure continued improvements in levels of health across the region, particularly in urban areas and deprived areas. • The need to ensure public awareness of drought conditions and importance of maintaining security of supply without the need for emergency drought measures. • The need to ensure water quantity and quality is maintained for other users including tourists, recreational users and other users such as farmers. 	<ul style="list-style-type: none"> • To protect and improve health and well-being and promote sustainable socio-economic development through provision of access to a resilient, high quality, sustainable and affordable supply of water over the long term. • To protect and enhance the water environment for other users including recreation tourism and navigation. 	<ul style="list-style-type: none"> • Will it help to ensure access to a resilient and secure supply of drinking water? • Will it help to promote healthy communities and protect from risks to health and wellbeing? • Will it assist in provision of essential infrastructure and services to support health and well-being and a sustainable economy? • Will it avoid negative effects on human health or quality of life, e.g. through noise, air quality or transport impacts? • Will it protect or enhance opportunities for recreation, tourist activities and navigation? • Will the option affect Public Rights of Way? • Will the option have an effect on active lifestyles, such as impacts on active travel

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	access to essential utility and infrastructure services.	<ul style="list-style-type: none"> The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities local residents and tourists, including opportunities for access to recreation resources and the natural and historic environment. The need to accommodate an increasing population. Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and well-being and the economy. 		<p>through disruption to pedestrian and cycle routes?</p> <p>Does the option improve access to the natural environment for recreation, including those living within deprived areas?</p>
Material assets and resource use	<ul style="list-style-type: none"> Promote sustainable management of natural resources, sustainable production and consumption whilst seeking to reduce the amount of waste generated by using materials, energy and water more efficiently. Consider issues of water demand, water supply and water quality in the natural environment and 	<ul style="list-style-type: none"> The need to minimise the consumption of resources, including water and energy The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill. Need to reduce leakage from the water supply system. 	<ul style="list-style-type: none"> To reduce, and make more efficient, the domestic, industrial and commercial consumption of resources, minimise the generation of waste, encourage its re-use and eliminate waste sent to landfill. 	<ul style="list-style-type: none"> Will it minimise the use of energy and promote energy efficiency? Will it minimise waste, and increase the proportion sent to reuse or recycling? Will it make use of existing infrastructure? Will it help to encourage sustainable design or use of

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>ensure a sustainable use of water resources.</p> <ul style="list-style-type: none"> Contribute to a resource efficient, green and competitive low carbon economy. Maintain a reliable public water supply and ensure there is enough water for human uses, as well as providing an improved water environment. Minimise the production of waste, ensure waste management is in line with the 'waste hierarchy', and eliminate waste sent to landfill. Promote the sustainable management of natural resources. 	<ul style="list-style-type: none"> Daily consumption of water resources is higher than the national average in the area and there is a need to encourage more efficient use. 		<p>sustainable materials (e.g. supplied from local resources)?</p> <ul style="list-style-type: none"> Will the option affect major built assets and infrastructure, including transport infrastructure?
Water	<ul style="list-style-type: none"> Maintain and improve water quality (surface waters and groundwater). Improve the quality of the water environment and the ecology which it supports, and continue to provide high levels of drinking water quality. Expand the scope of water protection to all waters, surface waters and groundwater. Ensure appropriate management of abstraction and protect flow and level variability across the full range of regimes from low to high conditions. 	<ul style="list-style-type: none"> The need to further improve the quality of the regions river, estuarine and coastal waters taking into account WFD status targets. The need to maintain the quantity and quality of groundwater resources taking into account WFD status targets. The need to improve the resilience, flexibility and sustainability of water resources in the region, particularly in light of potential climate change 	<ul style="list-style-type: none"> To maintain or improve the quality of rivers, lakes, groundwater, estuarine and coastal waterbodies. To avoid adverse impact on surface and groundwater levels and flows, and ensure sustainable management of abstractions. To reduce and manage flood risk, taking climate change into account. To increase awareness of water sustainability and efficient use of water. 	<ul style="list-style-type: none"> Will it avoid contamination of groundwater? Will it help to minimise risks associated with unsustainable abstraction of ground and surface waters? Will it abstract from a water resource with resource availability (with reference to CAMS status and WFD considerations)? Is the option likely to contribute to or conflict with the achievement of WFD objectives? Will it alter the flow or level regime or residence time of

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<ul style="list-style-type: none"> Develop a resilient and flexible water management approach to cope with changing climate, population and economic conditions. Balance the abstraction of water for supply with the other functions and services the water environment performs or provides. Encourage more efficient use of water and promote awareness of water sustainability. Steer new development to areas with the lowest probability of flooding and manage any residual flood risk, taking account of the impacts of climate change. Promote a catchment based approach to the management and work with local stakeholders to deliver catchment-based solutions to water quantity and quality. Develop a resilient and flexible water management approach to cope with changing climate, population and economic conditions. Reduce flood risk to people, residential and non-residential properties, community facilities and key transport links, as well as designated nature conservation 	<p>impacts on surface waters and groundwaters.</p> <ul style="list-style-type: none"> The need to ensure sustainable abstraction. The need to ensure that people understand the value of water. The need to reduce and manage flood risk. 		<p>surface waters or groundwaters?</p> <ul style="list-style-type: none"> Will it enable flexible control over the level of abstraction at short notice in response to changing environmental conditions? Will it avoid reducing flood plain storage, or provide opportunities to improve flood risk management? Will it enable a sustainable use of water resources that balances demand for water with environmental protection? Will it contribute towards improving the awareness of water sustainability and its true value? Will the option protect and enhance the environmental resilience of the water environment to climate change, flood risk and drought?

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>sites and heritage assets and landscapes of value.</p> <ul style="list-style-type: none"> • Reduce risk of flooding from reservoirs. 			
Soil, geology and land use	<ul style="list-style-type: none"> • Protect and enhance the quality and diversity of geology (including geological SSSIs) and soils, including geomorphology and geomorphological processes which can be lost or damaged by insensitive development. • Ensure that soils will be protected and managed to optimise the varied functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development. • Promote catchment-wide approach to land management by relevant stakeholders, in order to benefit natural resources, reduce pollution and develop resilience to climate change. • Promote mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some 	<ul style="list-style-type: none"> • The need to protect geological features of importance and maintain and enhance soil function and health. • The need to manage the land more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources). • The need to make use of previously developed land (brownfield land) and to reduce the prevalence of derelict land in the region. 	<ul style="list-style-type: none"> • To protect and enhance geology, geomorphology, and the quality and quantity of soils. 	<ul style="list-style-type: none"> • Will it avoid damage to and protect geologically important sites? • Will it avoid damaging the quality of agricultural land? • Will it protect, maintain and enhance soil function and health? • Will it ensure efficient use of land (e.g. make use of previously developed land)? • Will it contribute towards a catchment-wide approach to land management?

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>open land can perform many functions.</p> <ul style="list-style-type: none"> Encourage the effective use of land by reusing land that has been previously developed (brownfield land), provided that it is not of high environmental value. 			
Air and climate	<ul style="list-style-type: none"> Reduce greenhouse gas emissions. Targets include: reduce the UK's greenhouse gas emissions by at least 80% (relative to 1990 levels) by 2050. Reduce the effects of air pollution on ecosystems. Improve overall air quality. Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change. Build in adaption to climate change to future planning and consider the level of urgency of associated risks of climate change impacts accordingly. Need for adaptive measures to respond to likely climate change impacts on water supply and demand. Sustain compliance with and contribute towards EU limit values 	<ul style="list-style-type: none"> The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards. The need to mitigate against climate change through the reduction in greenhouse gas emissions in order to contribute to risk reduction over the long term. The need to adapt to the impacts of climate change for example through, sustainable water resource management, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities of climate change. 	<ul style="list-style-type: none"> To maintain and improve air quality. To minimise greenhouse gas emissions. To adapt and improve resilience to the threats of climate change. 	<ul style="list-style-type: none"> Will it reduce or minimise air pollutant emissions? Will it increase emissions to air in an areas sensitive to emissions (e.g. in proximity to an AQMA or sensitive habitat)? Will it reduce or minimise transport or energy requirements, and associated air and greenhouse gas emissions? Is there potential for the option to incorporate climate mitigation measures to reduce its carbon footprint, such as lower embodied carbon or incorporating renewable energy? Is the option vulnerable to climate change effects? Will it reduce vulnerability to risks associated with climate change effects (e.g. reduce the adverse effects of droughts and floods)?

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas.</p> <ul style="list-style-type: none"> Minimise energy consumption, support the use of sustainable/renewable energy and improve resilience to climate change. 			
Archaeology and cultural heritage	<ul style="list-style-type: none"> Built development in the vicinity of historic buildings could have implications for the setting and/or built fabric and cause damage to any archaeological deposits present on the site. Ensure active management of the Region's environmental and cultural assets. Ensure effects resulting from changes to water level (surface or sub-surface) on all water dependent historical and cultural assets are avoided. Consider effects on important wetland areas with potential for paleo-environmental deposits. Promote the conservation and enhancement of the historic environment, including the promotion of heritage and 	<ul style="list-style-type: none"> The need to conserve or enhance sites of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment. 	<ul style="list-style-type: none"> To conserve and enhance the historic environment, heritage assets and their settings, and protect archaeologically important sites. 	<ul style="list-style-type: none"> Will it avoid damage to and protect the historic environment, heritage assets and their settings, places and spaces that enhance local distinctiveness? Will abstraction alter the hydrological setting of water-dependent assets? Will it improve access, value, understanding or enjoyment of heritage assets and culturally/historically important assets in the region?

SEA topic	PPP Key Messages	Baseline Key Issues	SEA Objectives	Indicator Questions
	<p>landscape as central to the culture of the region and conserve and enhance distinctive characteristics of landscape and settlements.</p> <ul style="list-style-type: none"> Conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations. 			
Landscape and visual amenity	<ul style="list-style-type: none"> Protection and enhancement of landscape (including designated landscapes, landscape character, distinctiveness and the countryside). Abstraction and low river flows could negatively affect landscape and visual amenity. Enhance the value of the countryside by protecting the natural environment for this and future generations. Improve access to valued areas of landscape character in sustainable ways to enhance its enjoyment and value by visitors and stakeholders. 	<ul style="list-style-type: none"> The need to protect and improve the natural beauty of the region's AONBs and other areas of natural beauty. 	<ul style="list-style-type: none"> To protect and enhance designated and undesignated landscape, townscape and the countryside. 	<ul style="list-style-type: none"> Will it avoid adverse impacts and enhance designated landscapes? Will the option affect visual amenity? Will it improve access to valued areas of landscape character, e.g. the countryside and open space? Will the option create or improve green infrastructure which contributes to access to the landscape? Will it help to protect and improve non-designated areas of natural beauty and distinctiveness (e.g. woodlands) and avoid the loss of landscape features and local distinctiveness?

5.3 Proposed Framework for Assessment

5.3.1 Primary Assessment

An appraisal framework is proposed to assess each of the potential Regional Plan options against the SEA objectives. The appraisal framework will be applied to test the performance of each of the alternative measures (Regional Plan options) against the SEA objectives. This approach will enable the environmental performance of these options to be used to inform decision-making.

The WReN Regional Plan options may have effects outside of the WReN geographical region (see **Figure 2.1**), for example export options to neighbouring regional groups such as Water Resources West and/or Water Resources East. Where this is the case the effects of the option in its entirety will be considered in the appraisal against the SEA objectives and documented in the Environmental Report. Where an option will potentially be included in the WReN Regional Plan and a neighbouring area Regional Plan the two groups will collaborate on the environmental assessment to ensure consistency in data inputs and assessment approach.

The assessment of options will be used to inform the selection of options for inclusion in the Regional Plan. The proposed appraisal framework table is given in **Table 5.2**.

The appraisal framework (**Table 5.2**) is structured as follows:

- The first and second columns set out the SEA topics and objectives.
- The scale of the effect, which might relate to either geographical scale or the size of the population affected, is identified in the third column on a scale of small, medium to large.
- The impact evaluation includes consideration of the nature of the impact, certainty of effect, duration and permanence (fourth, fifth and sixth columns of **Table 5.2**) in compliance with criteria for determining the likely significance of effects specified in the SEA Directive Article 3(5) and Annex II, and the SEA Regulations Part 2, Regulation 9(2a) and Schedule 1. With respect to duration of temporary effects, short-term impacts are defined as those that last for up to six months, medium term impacts are those that extend for six months to two years whilst longer term temporary impacts are assessed as those that extend to two to five years. A 'significant long term' temporary impact category is used for those temporary effects that continue beyond five years in duration.
- The seventh column identifies the magnitude of the effect on a scale of low, medium and high.
- The value/sensitivity of the receptor(s) is identified in the eighth column on a scale of low, medium and high.
- The ninth column will be populated during the assessment with a commentary and evaluation of the impact of each alternative measure on the objectives for each topic, with reference to the indicator questions set out in column three. The assessment will assume the implementation of standard best practice in implementing the measures and any defined mitigation measures (which will be set out) so that the significance of effects relates to the residual effects after mitigation in line with the ODPM Practical Guide and UKWIR SEA national guidance. The mitigation measures for any identified adverse effects will be identified within the appraisal framework.
- The residual adverse and beneficial effects (after application of best practice approaches and any appropriate mitigation measures) are identified in the tenth and eleventh columns respectively. These were identified separately so as to avoid mixing adverse and beneficial effects. The commentary in column nine, combined with the magnitude (column seven) and value/sensitivity (column eight) informs the residual adverse or beneficial effects.

Table 5.2: Example of a SEA appraisal framework to be completed for each potential Regional Plan options (extract showing Biodiversity, flora and fauna topic only)

Topic	SEA objective	Scale of effect: geographical &/or population affected (Small/ Medium/ Large)	Certainty of effect (Low/ Medium/ High)	Duration of effect (short/ medium /long term)	Permanence of effect (permanent/ temporary)	Magnitude of effect (Low/ Medium/ High)	Value/ sensitivity of receptor (Low/ Medium/ High)	Potential residual effect on sensitive receptors (assuming good practice construction methods)	Residual Adverse Effect (likely to remain after reasonable mitigation)	Residual Beneficial Effect (likely to remain after reasonable mitigation)
Biodiversity, fauna and flora	1.1 To protect and enhance biodiversity, ecological functions, capacity, and habitat connectivity within the WReN region.									
	1.2 To provide opportunities for habitat creation or restoration and a net benefit/gain for biodiversity.									
	1.3 To protect, conserve and enhance natural capital and the ecosystem services from natural capital that contribute to the economy.									
	1.4 To avoid introducing or spreading INNS.									

The SEA appraisal framework will be used to capture the assessment for each option (one table completed per option), alternative programmes and the Regional Plan as a whole.

Varying levels of uncertainty are inherent within the assessment process. The assessment will minimise uncertainty through the application of expert judgement. The level of uncertainty of the option assessment for each SEA objective will be reported in the appraisal framework. Where there is significant uncertainty which precludes an effects assessment category being assigned for a particular option and SEA objective, an “uncertain” residual effects assessment label will be applied to that specific SEA objective.

The assessment of the options and the overall Regional Plan will be carried out using the effects assessment matrix shown in **Figure 5.1**, taking account of the scale, duration and permanence of the effect. The definitions for the effect significance are explained beneath **Figure 5.1**.

The effects assessment will take account of any proposed mitigation measures that have been incorporated into the option conceptual design and costs, i.e. it is the residual effects after the application of mitigation that will be assessed.

The resulting significance of effects will be considered in the prioritisation of options and programmes of options. Where major adverse residual effects are predicted, should the option/programme be included in the Regional Plan, measures envisaged to prevent, reduce and as fully as possible offset these effects on the environment (as a result of implementing the Regional Plan) will be outlined in the Environmental Report as appropriate. These will be in addition to any mitigation that has already been included in the conceptual design and costs of each alternative option. Mitigation may include additional provisions within the Regional Plan itself and/or measures to be applied during the Regional Plan implementation stage. It may also include proposals for changing other plans and programmes to address significant cumulative residual effects. WReN will consider how any remaining significant residual effects identified are to be monitored to identify any unforeseen adverse effects and to enable appropriate remedial action to be taken.

Figure 5.1: Significance matrix used to assess effects of each Regional Plan option on each SEA objective

Significance of Effect		Value/sensitivity of receptor		
		High	Medium	Low
Effect magnitude (includes scale of effect)	High	Major Adverse / Major Beneficial	Major Adverse / Major Beneficial	Moderate Adverse / Moderate Beneficial
	Medium	Major Adverse / Major Beneficial	Moderate Adverse / Moderate Beneficial	Minor Adverse / Minor Beneficial
	Low	Dependant on nature of impact/benefit	Minor Adverse / Minor Beneficial	Negligible

5.3.1.1 General Significance Definitions

Major - effects represent key factors in the decision-making process. They are generally associated with sites and features of international, national or regional importance. If adverse, such resources/features are generally those which cannot be replaced or relocated.

Moderate - effects are likely to be important considerations at a regional or district scale. If adverse, they are likely to be of potential concern.

Minor - effects are not likely to be decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.

Negligible - effects which are not perceptible, being within normal bounds of variation or the margin of forecasting error.

For the **'high' effect magnitude** (top row), a major effect significance is assigned for both high and medium value receptors to reflect the magnitude of the effect.

For the **'low' effect magnitude and 'high' value receptor** (bottom left box), the significance of effect could be minor, moderate or major dependent on the precise nature of the impact or benefit.

5.3.1.2 Summarising the effects assessment

The completed appraisal framework table for each option, alternative programmes and the overall Regional Plan will be presented in full in an appendix to the Environmental Report. A summary of the assessment will be presented within the main text of the Environmental Report as a colour-coded visual evaluation (VE) matrix. An example of the proposed VE matrix is given in **Table 5.3**. For each option and each SEA topic listed in the left hand column, the VE matrix summarises the likely significance of impacts (which will be discussed in full in the completed appraisal framework tables).

Table 5.3: Example of a Visual Evaluation Matrix

Regional Plan Option	SEA objective – adverse effects								SEA objective – beneficial effects							
	Objective 1.1	Objective 1.2	Objective 1.3	Objective 2.1	Objective 2.2	Objective 3.1	Objective 4.1	Objective 4.2	Objective 1.1	Objective 1.2	Objective 1.3	Objective 2.1	Objective 2.2	Objective 3.1	Objective 4.1	Objective 4.2
Option 1	Blue	Red	Blue	Yellow	Yellow	Red	Red	Red	Blue	Green	Blue	Blue	Green	Green	Green	Green
Option 2	Orange	Blue	Yellow	Red	Yellow	Orange	Orange	Red	Green	Blue	Green	Blue	Blue	Blue	Green	Green

Note: only a portion of the objectives are shown for illustration purpose

5.3.2 Secondary, Cumulative and Synergistic Environmental Effects

Schedule 2(6) of the SEA Regulations requires the assessment of “The likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects....” These can be defined as follows:

- Secondary or indirect effects are effects that are not a direct result of the plan, (e.g. an abstraction that changes local groundwater levels and thus affects the ecology of a nearby wetland).
- Cumulative effects arise, for instance, where several nearby groundwater sources each have insignificant effects but together have a measurable effect on river flows; or where several individual effects of a water resource zone programme (e.g. traffic disruption) have a combined effect.
- Synergistic effects interact to produce a total effect greater than the sum of the individual effects. Synergistic effects often happen as habitats, resources or human communities get close to capacity. For instance, a wildlife habitat can become progressively fragmented with limited effects on a particular species until the last fragmentation makes the areas too small to support the species at all.

The term 'cumulative effects' is being adopted as the collective term to include secondary, cumulative and synergistic effects (as suggested by the Practical Guide). The SEA of the Regional Plan will include cumulative effects assessment at each of the assessment levels as described in the following sections (option-level, programme-level and overall Regional Plan). It should be noted that some options may be mutually exclusive (i.e. only one of these options can be developed) and this will also be identified

in the SEA as part of the option-level assessment. For the programme level and Regional Plan level assessment, cumulative effects will include consideration of other plans, programmes and projects in the context of spatial and/or temporal proximity.

A matrix such as the example provided in **Figure 5.2** will be used to help consider interactions between options or programmes. In assessing these effects, consideration will be given to other factors which may affect the receiving environment in the short, medium and long term.

Figure 5.2: Cumulative Effects Assessment Matrix

Option 2				
Option 3				
Option 4				
Option 5				
Regional Plan Option	Option 1	Option 2	Option 3	Option 4

Key

	Mutually exclusive schemes, i.e. use the same site or the same resource
	Potential adverse construction impacts if constructed simultaneously
	Potential cumulative impacts in operation
	No cumulative impacts

5.3.2.1 Programme and Regional Plan level cumulative effects assessment

To meet the requirements of the SEA Regulations, consideration will be given to the cumulative effects between the preferred programmes and the Regional Plan with other relevant plans, programmes or projects. This will include consideration of effects with neighbouring Regional groups, including Water Resources East and Water Resources West Regional Plans and Drought Plans.

Cumulative effects with non-water resources related plans, programmes and projects will be considered where relevant, including existing completed projects, approved but uncompleted projects, ongoing activities, plans or projects for which an application has been made and which are under consideration by consenting authorities and plans and projects which are reasonably foreseeable (i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects). Sources of information include the following:

- Land use and development plans to identify major development proposals (those which are likely to generate large scale construction or operational effects e.g. growth points, strategic centres;
- Transport and other infrastructure plans (e.g. flood risk management plans, energy, and other utilities).
- Local Plans

The following cumulative assessments are proposed in the SEA:

- An assessment of cumulative effects of options that could potentially be implemented at the same time. Mutually exclusive options (e.g. those that draw upon the same resource or use the same site) will also be identified.
- Assessment of cumulative effects of the WReN Regional Plan with the other regional groups and water company Drought Plans and WRMPs, and other relevant water management plans.

5.4 Invasive Non-native Species

Increased evidence of environmental and economic risks posed by the presence and spread of invasive non-native species (INNS) has resulted in recognition of the need for INNS to be included as a new driver for PR19. The guidance supporting this driver is explicit in stating that “the most cost beneficial and least damaging way to manage invasive species is to prevent their arrival and spread.”⁷⁴ This highlights the need to understand the *pathways* by which INNS can be *transferred* and hence spread. Furthermore, the Environment Agency has specifically identified raw water transfers as a subgroup of pathways that should have priority risk assessments of INNS spread⁷⁵.

The Environment Agency provides a definitive list of what should be included within the INNS pathway risk assessment which includes parameters such as the nature of the connection (for example, piped transfer, natural, navigation), the distance of each connection and frequency of operation.

Additionally, the EA states that the risk assessment should not be specific to individual species of INNS but highlights the utility of understanding the transfer pathways which are likely to occur within a connection (for example, vegetative reproduction, egg dispersal, planktonic larvae)⁷⁶.

A pathway-based INNS assessment approach will, therefore, be used to assess the possible pathways for the introduction of INNS for each Regional Plan option.

A baseline data review will consider INNS occurrence records stored within the NBN Atlas and ecology data obtained from the Environment Agency (EA) Ecology Data Explorer will also be reviewed for the occurrence of INNS.

INNS species listed under; Schedule 9 of the Wildlife and Countryside Act, WFD UKTAG Aquatic Alien Species, NRW Sustainable management of natural resources (SMNR), EU Invasive and Alien Species Regulation, Wales Priority Species for Action, MSFD – UK priority species, WFD UKTAG alarm species, Wales marine priority INNS, GB NNSS Alert species will be identified from the datasets for consideration.

The purpose of the data review will be to establish which species are currently known to be present within the waterbodies/reaches associated with the Regional Plan options, and which species are present in the surrounding catchments and areas (i.e. species that could potentially spread into the study area in the future).

The INNS risk assessment will follow the pathway approach, recognising that certain types of asset or activities (e.g. raw water transfers) will provide a range of pathways, with different pathways having greater relevance and thus risk spread of certain INNS groups. A combination of pathway risks associated with groups of INNS and the occurrence of this pathway at/within an asset/activity will allow an INNS risk assessment and INNS risk scores to be developed.

The results of the INNS risk assessment will inform a specific SEA objective (see **Table 5.1**) that has been included to ensure that the information will be explicit in the SEA reporting.

5.5 Biodiversity Net Gain

5.5.1 Overview

Defra has described Net Gain as ‘an approach to development that aims to leave the natural environment in a measurably better state than beforehand’⁷⁷. The assessment focuses on quantifying impacts on specific types of environmental receptor (often biodiversity) to ensure enhancements are delivered and any negative impacts are compensated.

The WRPG Supplementary Guidance (see Section 2.3) requires that a plan ‘*should demonstrate how your plan leaves the natural environment in a measurably better state than it is currently*’ but that notes that while detailed assessment of BNG (i.e. via the Natural England ‘Biodiversity Metric 2.0’ tool) would need to be deployed at the detailed planning stage assessment stage it may not be appropriate at the

⁷⁴ Environment Agency (2017). PR19 Driver Guidance, Driver Name: Invasive Non-Native Species (INNS)

⁷⁵ Environment Agency (2017). PR19 - Assessing the risks of spread of Invasive non-native species posed by existing water transfers - OFFICIAL

⁷⁶ EA. 2017. PR19 - Assessing the risks of spread of Invasive non-native species posed by existing water transfers - OFFICIAL

⁷⁷ <https://www.gov.uk/government/consultations/biodiversity-net-gain-updating-planning-The-requirements#:~:text=Biodiversity%20net%20gain%20is%20an,measurably%20better%20state%20than%20beforehand.>

plan stage. The guidance states that it would be appropriate to '*categorise your options as having significant, moderate, limited or no biodiversity net gain potential*' rather than undertaking an assessment via the Metric 2.0.

The specific methodology at the Regional Plan options appraisal stage will be dependent upon the level of 'scheme' detail which are available. If sufficient detail is available for all options, then the Natural England Biodiversity Metric 2.0 will be utilised. This will require a number of assumptions given the high level nature of the assessment, which are set out below.

5.5.2 Proposed Approach

5.5.2.1 Identifying the biodiversity baseline conditions

The Defra BNG metric is a habitats-based assessment. To demonstrate best outcome (% BNG) will require a baseline calculation of current biodiversity value/score. This tool quantifies each habitat type into 'units' based on a number of factors, including habitat distinctiveness, area (or linear equivalent), condition, ecological connectivity and strategic significance.

A range of open source and accessible data will be used to gain a good understanding of habitats present within the zone of influence of each Regional Plan option that can provide a robust baseline.

Firstly, the habitat data will be provided by using existing habitat inventories, such as Corine Land Cover and areas measured in GIS. Secondly, the identification of habitat distinctiveness, condition and baseline extent for habitats, including priority habitats and designated and non-designated sites, would be determined through mapping on the Priority Habitat Inventory and open data on designated sites, utilising where possible the information collected for the SEA and HRA.

The following assumptions will be made where required:

- Where data on habitat quality is not available for a habitat, 'good' condition will be assumed to provide a precautionary assessment.
- Where data on strategic significance is not available, 'high' strategic significance will be assumed to provide a precautionary assessment.
- Where detailed information is not available a land take of 10m will be assumed for pipelines.

The baseline scores are adjusted for the associated habitat impacts (gains or losses) related to the construction and operation of each option as area of habitat loss. This is assessed in the absence of mitigation, following construction and prior to habitat re-instatement. This part of the assessment identifies high risk areas where the proposed options would result in a significant loss of biodiversity and offsetting would be more onerous, or the assessment may identify an 'irreplaceable habitat' that should be avoided, such as certain priority habitats. This information will feed into the option development in an iterative process.

The output of the Metric 2.0 tool spreadsheet will provide a table of baseline biodiversity unit scores for each option.

5.5.2.2 Identifying BNG opportunities and calculating the benefit score

Enhancement measures can include the provision of new habitats, provision of new habitat features and the improved management of existing habitats which will result in a net benefit to biodiversity, over and above the measures required to mitigate and compensate for the impacts of a proposed scheme. Enhancement opportunities are added to the Metric as a habitat area and the Metric re-calculates the quantity or balance of (units) of BNG provided, which is also given as a % change from the baseline. The aim is to achieve 10% net gain and this stage requires significant manipulation of habitat restoration/creation options to identify the best outcome.

The metric takes into account habitat distinctiveness and risk parameters associated with habitat creation and restoration. This means that a 1:1 replacement will not score 0 in terms of gains and losses but a negative number of units, as additional enhancements will be required, for example, to take account of time lag of the establishment of created/restored habitat. Therefore, if additional habitat area is required to offset losses and provide BNG, it is possible that insufficient land may be available on

site. A strategic assessment of off-site opportunity areas will be undertaken to identify suitable parcels of land where the best biodiversity gain could be achieved.

The approach will follow the mitigation hierarchy of avoiding, minimising and mitigating the habitat lost/deteriorated and local compensation. Maximum credits can be achieved through identifying opportunities for enhancing the habitat that is lost/degraded rather than replacement. However, where insufficient habitat lies on site to deliver what's required for net gain, alternative locations will need to be sought. A review will be undertaken of National and Local plans and policies, such as River Basin Management Plans, catchment or WFD objectives to identify any specific objectives for BNG that can be delivered, Blue/Green Infrastructure networks, Nature Improvement Areas, National Priority Focus Areas, Nature Recovery Networks, UK Tree Strategy, the UK Habitat Networks and functionally linked habitat for designated sites (Impacts Risk Zones).

Using the principles of Nature Recovery Networks, core areas for biodiversity will be identified, such as designated and non-designated sites and priority habitats. Opportunities for connecting these through habitat restoration/creation will be identified and mapped through habitat connectivity, including those already identified within Local Plans/LBAPs/strategies. The opportunities will be assessed for their suitability for specific net gain features, connectivity opportunities and achievability. Values will then be assigned against areas of mitigation opportunity with potential condition improvement for each feature and opportunity including specific mitigations recommendations.

Opportunities for biodiversity gain will be linked with those within SEA, WFD, HRA mitigation measures where applicable.

The output of the Metric 2.0 tool spreadsheet will provide a table of the habitats and areas required for enhancement/creation to offset the impacts of each element and provide a minimum 10% BNG. Representation of the BNG opportunities, habitat enhancements or creation, would be represented in GIS with areas shown within possible suitable locations based on habitat type only. The purpose is to represent the area of enhancement /creation required for a rapid assessment of achievability and flag any unmitigable impacts.

5.5.3 Integration into SEA

The SEA framework will include high level identification of potential for biodiversity net gain. A specific SEA objective has been included to assess this potential such that the information will be explicit in the SEA reporting (see **Table 5.1**). If use of the Metric 2.0 is possible, then the results of that assessment will inform the assessment against this SEA objective. In the absence of a detailed BNG assessment, the appraisal against the SEA objective will be informed on the basis of available information and will provide an assessment which will comply with the WRP (see Section 5.5.1).

5.6 Linkages Between SEA and Options Appraisal

The Regional Plan option appraisal will include assessment against the following capitals:

- Financial and Manufactured Capital combined
- Human Capital (some overlap with intellectual)
- Natural Capital
- Social Capital

Each of the options will be assessed against the criteria listed in **Table 5.4** and a value applied where it is relevant to the option

Table 5.4 WReN option appraisal capitals

Option appraisal capitals			
Natural Capital	Social Capital	Human Capital	Financial and Manufactured Capitals
Crops & livestock Fisheries Energy Water supply Global climate Air quality Flood regulation Water quality Pollination Recreation Amenity Non-use value	Wellbeing Quality of place Trust Local Economy	Employment Skills Health & safety Overlaps with intellectual	Build costs (CAPEX) Operating costs (OPEX)

The methodology proposed for the Regional Plan options appraisal will align with the environmental metrics developed for individual companies WRMP24, and in particular the Yorkshire Water's 'Six Capitals'⁷⁸ approach which will be adopted to provide consistency of output. This will enable WReN to quantify impacts on natural, social, human and financial and manufactured capitals. The approach will satisfy the requirements of the WRPG to include NCA in the environmental assessment of water resource options (see Section 2.3) and in addition expand the approach to consider all the relevant capitals, not just natural capital.

The natural, social and human capitals overlap with the SEA objectives, which must also be considered for each option. The combined approach to including SEA, BNG and capitals will provide data for relevant metrics in the optional appraisal system (i.e. environment performance metric and the human and social wellbeing metric).

The approach of combining the SEA with the capitals creates a risk that the costs and benefits could be double counted at both an option and plan level and the Supplementary Guidance 'Environment and society in decision making' (see Section 2.3) recognises it is not possible to avoid this completely. To minimise this risk, a mapping exercise has been carried out between the SEA objectives and the capitals. The SEA and capitals mapping process and the results are summarised in **Table 5.5**. At the end of the option appraisal process, an assessment will be made of the environmental and social impacts of the preferred plan to identify if any double counting could be a factor.

⁷⁸ <https://www.yorkshirewater.com/about-us/what-we-do/capitals/>

Table 5.5 SEA and capitals mapping results

Six Capitals	SEA Topics							
	Biodiversity, flora and fauna	Population and human health	Material assets and resource use	Water	Soil, geology and land use	Air and climate	Archaeology and Cultural Heritage	Landscape and Visual Amenity
Natural Capital								
Crops & livestock	✓	✓		✓	✓			
Fisheries	✓							
Energy			✓			✓		
Water supply	✓	✓	✓	✓		✓		
Global climate	✓					✓		
Air quality						✓		
Flood regulation				✓				
Water quality	✓	✓		✓	✓			
Pollination	✓							
Recreation		✓					✓	✓
Amenity	✓	✓			✓		✓	✓
Non-use value	✓	✓		✓		✓	✓	✓
Social Capital								
Wellbeing		✓						
Quality of place		✓						
Trust		✓	✓	✓		✓		
Local Economy		✓	✓					
Human Capital								
Employment		✓						
Skills		✓						
Health & safety		✓						

5.7 Linkages Between SEA and Environmental Destination

WReN have established an environmental destination workstream which is taking an evidence-based approach to environmental destination, working across key sectors and with regional and local groups, such as catchment partnerships, to identify environmental improvements that are meaningful to the WReN region and its catchments. In addition the environmental destination workstream will seek to align the regional planning process to support existing plans, where relevant to water resources, such as the National Farmers Union's (NFU) Integrated Management Strategy⁷⁹.

The evidence gathered through the environmental destination workstream will be incorporated in the SEA where applicable, for example the identification of sensitive catchments and key plans identified through engagement with regional stakeholders. Where the environmental destination influences the options for inclusion in the Regional Plan this will also provide an additional linkage to the environmental assessment workstream.

⁷⁹ NFU(no date) Integrated Water Management Report <https://www.nfuonline.com/nfu-online/news/nfu-reports/integrated-water-management/>

6 Habitats Regulations Assessment

6.1 Overview

The HRA will be undertaken in accordance with available guidance^{80,81,82,83,84,85,86} and will be based on a precautionary approach as required under the Conservation of Habitats and Species Regulations 2017 (as amended). A HRA Test of Likely Significance will be applied as a first step during assessment of the Regional Plan option list.

The objective of a HRA is to establish whether a plan or project is likely to have a significant effect on European sites (alone or in-combination with other plans or project), adopting the precautionary principle (Stage 1 Screening), and where likely significant effects cannot be ruled out, to determine through Appropriate Assessment (Stage 2 Appropriate Assessment) whether the plan or project would adversely affect the integrity of an European site(s). Where significant adverse effects are identified at the Appropriate Assessment stage, the derogation process would apply (Stage 3 Alternative Solutions and Stage 4 Imperative Reasons of Overriding Public Interest (IROPI)).

As the Draft Regional Plan submission does not form a statutory plan or project, the principles of the HRA process will be applied to help identify *risks to feasibility* and deliverability of the option components. A Stage 1 screening will be undertaken as part of the initial screening exercise for each of the strategic options.

The HRA will inform the SEA (biodiversity topic) and will be completed prior to SEA option-level assessments.

Following recent case law developments including the 'People over Wind' judgement, it is anticipated that Stage 2 Appropriate Assessment may be required, but the approach will be 'appropriate' to the level of detail of this strategic plan whilst demonstrating compliance. It is unlikely that schemes will be included in the Regional Plan if an Appropriate Assessment cannot conclude no effect on site integrity, therefore, it is unlikely that HRA Stages 3 or 4 will be required.

6.1.1 Stage 1 Screening

Each option component will be considered to determine whether there are any likely significant effects (LSE) arising from construction or implementation activities and/or operation of the option on one or more European sites, including Special Protection Areas (SPAs)⁸⁷ and Special Areas of Conservation (SACs)⁸⁸ (also known as Natura 2000 sites). The Government (England and Wales) also expects potential SPAs (pSPAs), candidate SACs (cSACs), compensation habitat and Ramsar sites⁸⁹ to be included within the assessment⁹⁰. For ease of reference, these designations are collectively referred to as "European sites", despite Ramsar designations being made at the international level rather than EU level and are also known as 'Natura 2000' sites. This will consider options alone and in combination with other plans and projects.

⁸⁰ European Commission Environment DG (2001) Assessment of plans and projects significantly affecting European Sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.

⁸¹ Department for Communities and Local Government (DCLG) (2006) Planning for the Protection of European Sites. Guidance for Regional Spatial Strategies and Local Development Documents.

⁸² English Nature (1997) The Appropriate Assessment (Regulation 48) The Conservation (Natural Habitats &c) Regulations, 1994. Guidance Note HRGN1.

⁸³ English Nature (1997) The Determination of Likely Significant Effect under The Conservation (Natural Habitats &c.) Regulations 1994. Guidance Note HRGN3.

⁸⁴ Defra (2012) The Habitats and Wild Birds Directives in England and its seas: Core guidance for developers, regulators & land/marine managers.

⁸⁵ Tyldesley, D. & Chapman, C. (2013) The Habitats Regulations Assessment Handbook. December 2020 edition DTA Publications.

⁸⁶ Environment Agency (2020). Water resources planning guideline – draft for consultation July 2020

⁸⁷ SPAs are classified under the European Council Directive 'on the conservation of wild birds' (2009/147/EC; 'Birds Directive') for the protection of wild birds and their habitats (including particularly rare and vulnerable species listed in Annex 1 of the Birds Directive, and migratory species).

⁸⁸ SACs are designated under the Habitats Directive (92/43/EEC) and target particular habitats (Annex 1) and/or species (Annex II) identified as being of European importance.

⁸⁹ Ramsar sites support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

⁹⁰ Department for Communities and Local Government (2012) National Planning Policy Framework.

GIS data will be used to map the locations and boundaries of European sites in relation to the different option components. The attributes of the European sites, which contribute to and define their integrity, current conservation status and the specific sensitivities of the site will be considered with reference to:

- Standard Data forms for SACs and SPAs and Information Sheets for Ramsar sites. An analysis of these information sources will enable the identification of the site's qualifying features;
- Article 12 and 17 reporting;
- Site conservation objectives;
- Supplementary advice to the conservation objectives (SACO) where available;
- Site Improvement Plans; and
- the supporting Site of Special Scientific Interest's favourable condition tables where relevant and no SACOs applicable to the features were available.

Analysis of how potential impacts of the Regional Plan options may affect a European site will be undertaken using this information.

The qualifying habitats and species of European sites are vulnerable to a wide range of impacts such as physical loss or damage of habitat, disturbance from noise, light, human presence, changes in hydrology (e.g. changes in water levels/flow, flooding), changes in water or air quality and biological disturbance (e.g. direct mortality, introduction of disease or non-native species). The assessment will consider the construction and operational effects.

In determining the likelihood of significant effects on European sites, particular consideration will be given to the possible source-receptor pathways through which effects may be transmitted from activities associated with the option, to features contributing to the integrity of the European sites (e.g. surface water catchments, air, etc.). **Table 6.1** provides examples of the types of impacts the option could have on European site qualifying features.

Screening for LSEs will be determined on a proximity basis for many of the types of impacts, based on the proximity of the potential location of the components of the option, to each European site. However, there are many uncertainties associated with using set distances as there are very few standards available as a guide to how far impacts will extend, and this was highlighted in the recent Wealden case (March 2017⁹¹). Different types of impacts can occur over different distances, and as such the assumptions and distances used in the HRA and a justification for their use are provided in **Table 6.1**. Consideration has also been given to the underlying SSSI Impact Risk Zones.

The results of the HRA Stage 1 screening will inform the first level of assessment; initial screening of option components, the results of which will be summarised in a standalone report. The report will be issued for consultation alongside the Draft Regional Plan in early 2022.

⁹¹ Wealden District Council vs Secretary of State for Communities and Local Government (SSCLG), Lewes District Council and South Downs National Park Authority (NPA) relating to HRA.

Table 6.1 Potential impacts of scheme on European sites

Broad categories of potential impacts on European sites, with examples	Examples of operations responsible for impacts (<i>distance assumptions in italics</i>)
<p>Physical loss:</p> <ul style="list-style-type: none"> Removal (including offsite effects, e.g. foraging habitat, and removal of supporting habitat within boundary of a SPA) Smothering 	<p><i>Development of infrastructure associated with scheme, e.g. new or temporary pipelines, transport infrastructure, temporary weirs.</i></p> <p><i>Indirect effects from a reduction in flows e.g. drying out marginal habitat.</i></p> <p>Physical loss is most likely to be significant where the boundary of the scheme extends within the boundary of the European site, or within an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated).</p>
<p>Physical damage:</p> <ul style="list-style-type: none"> Sedimentation / silting Prevention of natural processes including coastal and fluvial bank stabilisation, prevention of long-shore drift etc. Habitat degradation Erosion Fragmentation Severance/barrier effect Edge effects 	<p><i>Reduction in river flow leading to permanent and/or temporary loss of available habitat, sedimentation/siltation, fragmentation, etc.</i></p> <p>Physical damage is likely to be significant where the boundary of the scheme extends within or is directly adjacent to the boundary of the European site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated, or where natural processes link the scheme to the site, such as through hydrological connectivity downstream of a scheme, long shore drift along the coast, or the scheme impacts the linking habitat).</p>
<p>Non-physical disturbance:</p> <ul style="list-style-type: none"> Noise (incl. underwater) Visual presence Human presence Light pollution 	<p><i>Noise from temporary construction or temporary pumping activities.</i></p> <p>Taking into consideration the noise level generated from general building activity (c. 122dB(A)) and considering the lowest noise level identified in appropriate guidance as likely to cause disturbance to bird species, it is concluded that noise impacts could be significant up to 1km from the boundary of the European site⁹².</p> <p><i>Noise from vehicular traffic during operation of a scheme.</i></p> <p>Noise from construction traffic is only likely to be significant where the transport route to and from the scheme is within 3-5km of the boundary of the European site.</p> <p><i>Plant and personnel involved in in operation of the scheme.</i></p> <p>These effects (noise, visual/human presence) are only likely to be significant where the boundary of the scheme extends within or is directly adjacent to the boundary of the European site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated).</p> <p><i>Schemes which might include artificial lighting, e.g. for security around a temporary pumping station.</i></p> <p>Effects from light pollution are only likely to be significant where the boundary of the scheme is within 500m of the boundary of the European site. From a review of Environment Agency internal guidance on HRA and various websites/sources^{93,94,95} it is considered that effects of vibration and noise and light are more likely to be significant if development is within 500m of a European site.</p>

⁹² British Standards Institute (BSI) (2009) BS5228 - Noise and Vibration Control on Construction and Open Sites. BSI, London.

⁹³ Institute of Lighting Professionals (2011) Guidance Notes for the Reduction of Obtrusive Light GN01:2011

⁹⁴ Environment Agency (2013) Bird Disturbance from Flood and Coastal Risk Management Construction Activities. Overarching Interpretive Summary Report. Prepared by Cascade Consulting and Institute of Estuarine and Coastal Studies.

⁹⁵ Cutts N, Hemingway K and Spencer J (2013) The Waterbird Disturbance Mitigation Toolkit Informing Estuarine Planning and Construction Projects. Produced by the Institute of Estuarine and Coastal Studies (IECS). Version 3.2.

Broad categories of potential impacts on European sites, with examples	Examples of operations responsible for impacts (<i>distance assumptions in italics</i>)
<p>Water table/availability:</p> <ul style="list-style-type: none"> • Drying • Flooding / stormwater • Changes to surface water levels and flows including both increases and reductions. • Changes in groundwater levels and flows • Changes to coastal water movement 	<p><i>Changes to water levels and flows due to increased water abstraction, reduced storage or reduced flow releases from reservoirs to river systems.</i></p> <p>These effects are only likely to be significant where the boundary of the scheme extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the scheme and the European site, and sometimes, whether the scheme is up or down stream from the European site.</p>
<p>Toxic contamination:</p> <ul style="list-style-type: none"> • Water pollution • Soil contamination • Air Pollution 	<p><i>Reduced dilution in downstream or receiving waterbodies due to changes in abstraction or reduced compensation flow releases to river systems.</i></p> <p>These effects are only likely to be significant where the boundary of the scheme extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the scheme and the European site, and sometimes, whether the scheme is up or down stream from the European site.</p> <p><i>Air emissions associated with plant and vehicular traffic during construction and operation of schemes.</i></p> <p>The effect of dust is only likely to be significant where site is within or in proximity to the boundary of the European site^{96,97}. Without mitigation, dust and dirt from the construction site may be transported onto the public road network and then deposited/spread by vehicles on roads up to 500m from large sites, 200m from medium sites, and 50m from small sites as measured from the site exit.</p> <p>Effects of road traffic emissions from the transport route to be taken by the project traffic are only likely to be significant where the protected site falls within 200 metres of the edge of a road affected⁹⁸.</p>
<p>Non-toxic contamination:</p> <ul style="list-style-type: none"> • Nutrient enrichment (e.g. of soils and water) • Algal blooms • Changes in salinity • Changes in water chemistry (e.g. pH, calcium balance etc) • Changes in thermal regime • Changes in turbidity • Changes in sedimentation/silting 	<p><i>Changes to water salinity, nutrient levels, turbidity, thermal regime due to increased water abstraction, storage, or reduced compensation flow releases to river systems.</i></p> <p>These effects are only likely to be significant where the boundary of the scheme extends within the same ground or surface water catchment as the European Site. However, these effects are dependent on hydrological continuity between the scheme and the European site, and sometimes, whether the scheme is up or down stream from the European site.</p>
<p>Biological disturbance:</p> <ul style="list-style-type: none"> • Direct mortality • Changes to habitat availability 	<p><i>Potential for changes to habitat availability, for example reductions in wetted width of rivers leading to desiccation of macrophyte beds due to changes in abstraction or reduced compensation flow releases to river systems.</i></p>

⁹⁶ Highways Agency (2003) Design Manual for Roads and Bridges (DMRB), Volume 11.

⁹⁷ Institute of Air Quality Management (2014) Guidance on the assessment of dust from demolition and construction v1.1.

⁹⁸ NE Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final - June 2018

Broad categories of potential impacts on European sites, with examples	Examples of operations responsible for impacts (<i>distance assumptions in italics</i>)
<ul style="list-style-type: none"> • Out-competition by non-native species • Selective extraction of species • Introduction of disease • Rapid population fluctuations • Natural succession 	<p><i>Creation of new pathway of non-native invasive species.</i></p> <p>This effect is only likely to be significant where the scheme is situated within the European site or an upstream tributary of the European site (or affects groundwater levels supporting these sites or tributaries)</p>

6.1.1.1 Stage 2 Appropriate Assessment

Where a Likely Significant Effect is identified for an option at the screening stage (noting the precautionary principle), the option will be subject to the *principles* of the Stage 2 Appropriate Assessment, noting again that the Regional Plan does not form a statutory plan or project and as such there is no competent authority undertaking the integrity test.

Further assessment will therefore be undertaken to identify where there are risks that the integrity test cannot be met, and to identify further survey, assessment and mitigation development to provide greater certainty to any conclusions. This will consider scheme options alone and in in-combination with other plans and projects.

The Appropriate Assessment will consider the potentially damaging aspects of the options, both construction and operation, and the potential effects on the associated European site's qualifying features and achievement of the conservation objectives, and will characterise the impacts in terms of their likelihood, nature, scale, severity and duration.

The potential for adverse effects on the integrity of a European site depends on the scale and magnitude of the action and its predicted impacts, taking into account the distribution of the qualifying features across the site in relation to the predicted impact and the location, timing and duration of the proposed activity and the level of understanding of the effect, such as whether it has been recorded before and, based on current ecological knowledge, whether it can be expected to operate at the site in question.

6.1.1.2 Impacts

To determine adverse effect on site integrity, the following parameters are used as appropriate to define the impact (i.e. mechanism by which effects are caused):

- Impact type - direct or indirect, positive or negative
- Magnitude of impact – the 'amount' or intensity of an impact. This may sometimes be synonymous with 'extent' (see below) for certain impacts, such as habitat loss.
- Extent of impact – the area over which the impact will be felt.
- Duration of impact – how long it will occur. The guidelines suggest that ecological impact durations should be described in terms of ecological characteristics (e.g. species lifecycles/longevity) rather than human timeframes. The definitions of duration based on this approach and using professional judgement are detailed in **Table 6.2**.
- Timing of impact – when it will occur, taking note of seasonality.
- Frequency of impact – how often it will occur.
- Reversibility of impact – whether recovery or reinstatement is possible.

Table 6.2 Definitions of impact duration

Duration	Habitats	Species
Short-term	The typical regrowth period for many submerged macrophytes, grass and herb communities – as a rough guide, up to two years	<i>Impact is measurable up to one (breeding/wintering, migration, spawning etc.) season – as a rough guide, up to a year for fauna</i>
Medium-term	The typical regrowth period for many shrub and hedge communities, slower growing macrophytes and reedbeds – as a rough guide, two to eight years	<i>Impact is measurable up to one typical reproductive lifespan (in the wild). This varies depending on species, but generally anything from one year to 5 years as a rough guide for most fauna</i>
Long-term	A period lasting longer than the typical scrub/hedge regrowth period – as a rough guide, more than 8 years	<i>Impact is measurable over several (species) generations</i>
Permanent	<i>An impact where no reasonable chance of recovery/restoration is evident within the foreseeable future</i>	

These impacts then need to be reviewed in terms of the effects to the qualifying habitats and species.

6.1.1.3 Adverse Effect

The possible impacts associated with each option will be considered in the context of their effect on the qualifying features for the sites under consideration.

An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of designation. In addition, an adverse effect would be one which caused a detectable reduction of the features for which a site was designated, at the scale of the site rather than at the scale of the location of the impact.

The Habitats Directive defines the conservation status of habitats as 'favourable' when:

- Its natural range and areas it covers within that range are stable or increasing; and
- The species structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.

The Habitats Directive defines the conservation status of species as 'favourable' when:

- Population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats;
- The natural range of the species is neither being reduced for the foreseeable future; and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

The data that will be used in the more detailed assessments will be limited to that readily available.

6.1.1.4 Integrity Test

The integrity test is the conclusion of an Appropriate Assessment and requires the competent authority to ascertain whether the proposed scheme (either alone or in-combination with other plans or projects), will have no adverse effect on site integrity. The following definition of site integrity is provided by Defra: the integrity of the site is "*the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the level of populations of the species for which it was classified*"⁹⁹.

The potential for an adverse effect on integrity will be assessed against the conservation objectives as far as possible, and where there are risks that the integrity test cannot be met these will be flagged.

⁹⁹Defra Circular 01/2005.

7 Water Framework Directive Assessment

The WFD assessment's purpose is to ensure the Regional Plan both helps to avoid the deterioration and contribute to the improvement of the status of water bodies, including rivers, lakes, groundwater and estuarine and coastal waters.

A robust, practical approach will be undertaken to deliver a proportionate WFD compliance assessment that complies with statutory requirements and regulatory guidelines. The approach will be primarily based on that set out in the updated UKWIR Guidance¹⁰⁰.

A sequential 4-stage process for undertaking WFD compliance assessments will be applied. The sequential four steps are as follows:

1. WFD compliance assessment screening: involves a preliminary assessment of each option and identifies whether there may be any risk of deterioration in WFD status. This is based on expert judgement. Where a risk is identified, the option is subject to the WFD compliance assessment.
2. WFD compliance assessment: This involves assessment of the likely changes to hydro-morphology and water quality occurring as a result of the construction or operation of the option and the possible risks to WFD status. In addition, the potential effects on WFD protected areas are assessed. .
3. Option level WFD compliance assessment: This involves summarising WFD compliance assessments of each of the options on the feasible list (from Steps 1 and 2).
4. Preferred plan WFD compliance statement: This involves a statement of the compliance of the preferred plan against each of the WFD compliance objectives (set out below). This involves assessment of the set of options within the programme, both alone and in combination with other options within the programme. The assessment is also used to identify where multiple options potentially impact on the same WFD waterbody, and potentially downstream waterbodies where appropriate.

The fundamental environmental objectives of the WFD are to attain good ecological status and prevent deterioration of the status of water bodies. These objectives are set down in Article 4 of the WFD. Any new development (as well as existing operations) must ensure that these WFD objectives are not compromised. Article 4 on environmental objectives has been interpreted and further developed in the WRPG and the UKWIR guidance (see Section 2.3) to give a series of objectives to test in the WFD assessment. Based on these, the following are set out as objectives to test for in the WFD compliance assessment:

- WFD Compliance Objective 1: Prevent deterioration between WFD status classes of any water body
- WFD Compliance Objective 2: Prevent introduction of impediments to the attainment of 'Good' WFD status or potential for the water body
- WFD Compliance Objective 3: Ensure that the planned programme of measures in the current RBMP, to help attain the WFD objectives for the water body, are not compromised.

Three further objectives will be included to review and document if the option assists the meeting of WFD objectives, which is over and above a test of WFD compliance of the option:

- WFD Compliance Objective 4: To assist the attainment of the WFD objectives for the water body¹⁰¹.

¹⁰⁰ UKWIR (2021) Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans. Report Ref 21/WR/02/15.

¹⁰¹ WFD Regulations Regulation 13(2)b for normal surface water bodies; Regulation 13(2)c for artificial or heavily modified water bodies

- WFD Compliance Objective 5: To assist the attainment of the objectives for associated WFD protected areas¹⁰².
- WFD Compliance Objective 6: To reduce the treatment needed to produce drinking water and look to work in partnership with others; promoting the requirements of Article 7 of the WFD¹⁰³.

A lack of benefit in answer to testing of Objectives 4, 5 or 6 does not indicate that the option/plan has WFD compliance constraints but does inform the assessment of that option relative to other options.

The WFD compliance assessment will be integrated into the relevant SEA topics and will be completed prior to SEA option-level assessments.

A standalone WFD Compliance Report will be produced to document the results of the four sequential steps outlined above and will be issued for consultation alongside the Draft Regional Plan in early 2022.

¹⁰² Specifically set out in WRP 2020 July draft at Section 4.1.1 noting WFD Regulations Regulation 13(6)

¹⁰³ Specifically set out in WRP 2020 July draft at Section 9.2.6

8 Next Steps

This Scoping Report documents the proposed scope and approach for the SEA of WReN's Regional Plan and represents Stage A of the SEA (see **Table 2.1**). It is issued as a consultation document to seek agreement on the scope and approach. Following consultation, the scope and/or approach may be modified to take account of consultees' responses. Consultation responses, and any subsequent amendments made as a consequence of the responses, will be documented in an appendix to the SEA Environmental Report.

Five weeks are being provided for consultees to provide comments on the scope of the SEA as described within this report, in line with SEA Regulation 12(6).

Following completion of the assessments the draft SEA Environmental Report, HRA Screening Report (and Appropriate Assessment(s) if required) and WFD Compliance Report will be issued alongside the Draft Regional Plan for consultation to statutory consultees, WReN stakeholders and the wider public in early 2022

Appendices

Appendix A: Review of Policies, Plans and Programmes

Appendix B: Environmental Baseline Supporting Information

Appendix C: Quality Assurance Checklist

Appendix A – Review of Policies, Plans and Programmes

The findings of the review of policy, plans and programmes are set out in **Table A1**. The purpose of the review and the key findings are set out in Section 3.2 of this Scoping Report. This table sets out the purpose and objectives of the policy, plans and programmes, their potential relationship with WReN's Regional Plan and the potential implications of the plan objectives for the objectives of the SEA.

Table A1 Summary of the Policy, Plans and Programmes reviewed and their link to the Strategic Environmental Assessment

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
International	
Ramsar Convention: The Convention on Wetlands of International Importance (1971)	
The Convention on Wetlands (Ramsar, Iran, 1971) (the "Ramsar Convention") is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.	The impacts of the Regional Plan options on important wetland habitats must be considered as part of the SEA.
The World Heritage Convention (1972)	
The Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	
International convention which aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The impacts of the Regional Plan options on internationally designated sites, species and important Bird habitats must be considered as part of the SEA.
The Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)	
Aims to conserve terrestrial, marine and avian migratory species throughout their range. Enforced in European legislation through the Habitats Directive (92/43/EEC) and Birds Directive (79/409/EEC).	The impacts of the Regional Plan options on important Bird habitats (i.e. Ramsar sites and SPA designated sites) must be considered as part of the SEA.
Charter for the Protection and Management of Archaeological Heritage (1990)	
The International Council on Monuments and Sites (ICOMOS) International Committee on Archaeological Heritage Management (ICAHM) created a charter to establish principles and guidelines of archaeological heritage management that are globally valid and can be	The impacts of the Regional Plan options on archaeological heritage sites must be considered as part of the SEA.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
adapted to national policies and conditions. This includes general principles for investigation, maintenance, and conservation as well as reconstruction of architectural heritage.	
United Nations (1992), Convention on Biological Diversity (CBD)	
<p>The main objectives are:</p> <p>Conservation of biological diversity</p> <p>Sustainable use of its components</p> <p>Fair and equitable sharing of benefits arising from genetic resources</p>	<p>The commitment to conserving biological diversity must be considered in any Regional Plan options and the SEA should seek to promote the protection and enhancement of biodiversity.</p>
The Cancun Agreement (2011) & Kyoto Agreement (1997)	
<p>The agreement represent key steps forward in capturing plans to reduce greenhouse gas emissions and to help developing nations protect themselves from climate impacts and build their own sustainable futures. It includes a shared vision to keep global temperature rise to below two degrees Celsius.</p>	<p>The SEA should seek to promote a reduction in greenhouse gas emissions.</p>
United Nations Economic Commission for Europe (1998) Aarhus Convention - Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters	
<p>The Aarhus Convention grants the public rights regarding access to information, public participation and access to justice, in governmental decision-making processes on matters concerning the local, national and transboundary environment. It focuses on interactions between the public and public authorities.</p> <p>The Aarhus Convention has been ratified by the European Community, which has begun applying Aarhus-type principles in its legislation, notably the Water Framework Directive (Directive 2000/60/EC).</p>	<p>The Convention is designed to improve the way ordinary people engage with government and decision-makers on environmental matters. It helps to ensure that environmental information is easy to get hold of and easy to understand.</p> <p>The SEA should seek to provide easily understood information to the public on the environmental implications of the Regional Plan and its constituent options.</p>
United Nations (2002), Commitments arising from the World Summit on Sustainable Development, Johannesburg	
<p>The World Summit on Sustainable Development proposed broad-scale principles which should underlie sustainable development and growth.</p> <p>It included objectives such as:</p> <p>Greater resource efficiency</p> <p>Work on waste and producer responsibility</p> <p>New technology development</p> <p>Push on energy efficiency</p>	<p>These commitments are the highest level definitions of sustainable development. The Regional Plan should be influenced strongly by all of these themes and should seek to take its aims into account.</p> <p>The SEA should seek to promote the achievement of the sustainable development objectives outlined in this plan.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Integrated water management plans needed Minimise significant adverse effects on human health and the environment from chemicals by 2020.	
Paris Agreement (2015)	
The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force on 4 November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels.	The Regional Plan SEA should take into account the need to consider impacts towards climate change (i.e. contribution towards greenhouse gas emission reductions).
European	
European Commission, Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive)	
This Directive ensures that individual Parties integrate environmental assessment into their plans and programmes at the earliest stages, whereby an SEA becomes mandatory for plans/programmes which are: <ul style="list-style-type: none"> Prepared for agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town & country planning or land use <u>and</u> which set the framework for future development consent of projects listed in the EIA Directive; Or Have been determined to require an assessment under the Habitats Directive. For any plans/programmes not included in the above, the Member States must carry out a screening procedure to determine whether the plans/programmes are likely to have significant environmental effects.	This directive provides the regulatory basis for an SEA being carried out as part of the Regional Plan.
The Convention for the protection of the architectural heritage of Europe (Granada Convention) (1985)	
This sets the framework for the approach to conservation across Europe.	The SEA should take into account the need to conserve heritage.
The European Convention on the Protection of Archaeological Heritage (Valetta Convention) (1992)	
The European Convention for the Protection of the Archaeological Heritage sets out a revised body of new basic legal standards for Europe to	The SEA should take into account the need to conserve heritage.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
the previous Granada Convention, to be met by national policies for the protection of archaeological assets as sources of scientific and documentary evidence. It makes the conservation and enhancement of the archaeological heritage one of the goals of urban and regional planning policies.	
Council of Europe (2003) European Soils Charter	
Sets out common principles for protecting soils across Europe and will help.	The SEA should seek to ensure that the quality of the regions land, including soils, is protected or enhanced.
Council of Europe (2006), European Landscape Convention	
<p>European Landscape Convention (ELC) is the first international convention to focus specifically on landscape. Natural England implements the European Landscape Convention in England. The aims of the 2009/10 action plan are:</p> <p>Lead on improving the protection, planning and management of all England's landscapes</p> <p>Raise the quality, influence and effectiveness of policy and practical instruments</p> <p>Increase the engagement in and enjoyment of landscapes by the public</p> <p>Collaborate with partners across the UK and Europe.</p>	The implementation of the Regional Plan may influence landscape or the enjoyment of landscapes in the Yorkshire River Basin District and as such the SEA should seek to maintain or enhance the quality of the regions landscapes and the potential enjoyment of these landscapes.
The Environment Noise Directive (Directive 2002/49/EC)	
The END aims to —define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise. It also aims to provide the basis for developing EU measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery.	The SEA assessment framework should include for the protection against excessive noise.
European Commission (2008) The 2008 ambient air quality directive (2008/50/EC)	
The 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). As well as having direct effects, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems.	The implementation of the Regional Plan may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.

Objectives identified in the Policy, Plan or Programme		Influences on the Regional Plan and the SEA objectives
European Commission, Thematic strategy on air pollution (2005)		
This policy sets out interim objectives for air pollution in the EU and measures for achieving them.		The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.
European Commission (2009) Promotion of the use of energy from renewable sources Directive (2009/28/EC)		
This promotes the use of energy from renewable sources.		The SEA should seek to promote the use of renewable energy.
European Economic Community, Directive on the Conservation of Wild Birds (79/409/EEC) (as amended)		
The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State		The SEA should seek to protect and conserve wild bird habitats.
European Commission (2009), Birds Directive (2009/147/EC)		
The Directive provides a revised framework for the conservation and management of, and human interactions with, wild birds in Europe. It sets broad objectives for a wide range of activities, although the precise legal mechanisms for their achievement are at the discretion of each Member State (in the UK delivery is via several different statutes).		The SEA should seek to protect and conserve important bird habitats.
European Commission, Floods Directive (2007/60/EC)		
The Directive's aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans.		The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the Regional Plan.
European Commission (2006) Fresh Water Fish Directive (2006/44/EC)		
The Directive seeks to protect those fresh water bodies identified by Member States as waters suitable for sustaining fish populations. For those waters, it sets physical and chemical water quality objectives for salmonid waters and cyprinid waters.		The SEA should seek to promote the protection of river and lake water quality in order to maintain and develop suitable environments that will sustain fresh water fish populations.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
The Directive is designed to protect and improve the quality of rivers and lakes to encourage healthy fish populations.	
European Commission (2007), Establishing measures for the recovery of the stock of European eel (1100/2007)	
<p>This Directive establishes:</p> <p>A framework for the protection and sustainable use of the stock of European eel of the species <i>Anguilla anguilla</i> in Community waters, in coastal lagoons, in estuaries, and in rivers and communicating inland waters of Member States that flow into the seas in ICES areas III, IV, VI, VII, VIII, IX or into the Mediterranean Sea;</p> <p>The establishment of Eel Management Plans;</p> <p>The requirement for trans-boundary Eel Management Plans;</p> <p>Measures concerning restocking and Community Waters.</p>	The SEA should seek to promote the protection of eel populations and avoid disruption to the management of their habitats.
European Commission, Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (2006/88/EC)	
<p>The Directive establishes:</p> <p>Animal health requirements for the placing on the market, importation and transit of aquaculture animals and their products;</p> <p>Minimum measures to prevent diseases in aquaculture animals;</p> <p>Minimum measures to be taken in response to suspected or established cases of certain diseases in aquatic animals.</p>	The implementation of the Regional Plan may influence biodiversity in the Yorkshire, Tees, Wear and Tyne River Basin Districts and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.
European Commission (2011), Our life insurance, our natural capital: an EU biodiversity strategy to 2020	
<p>This is a long-term vision which was endorsed as a result of the 2010 biodiversity target not being met. It sets out the EU 2020 biodiversity target and vision for 2050. The key targets included:</p> <ul style="list-style-type: none"> • Conserving and restoring nature; • Maintaining and enhancing ecosystems and their services; • Ensuring the sustainability of agriculture, forestry and fisheries; • Combating invasive alien species; and • Addressing the global biodiversity crisis. 	The implementation of the Regional Plan should seek to facilitate achievement of the EU 2020 biodiversity target and 2050 vision, through its existing consideration of impacts towards biodiversity, set out in the SEA objectives.
European Commission, Environmental Liability Directive (2004/35/EC)	
The Directive establishes a framework for environmental liability based on the "polluter pays"	The SEA should seek to ensure that the Regional Plan avoids causing direct or indirect

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
principle, with a view to preventing and remedying environmental damage.	damage to the aquatic environment or contamination of land that creates a significant risk to human health.
European Commission (2000), The Water Framework Directive (2000/60/EC)	
<p>This Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal water and groundwater. It also encourages the sustainable use of water resources.</p> <p>Key objectives are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water.</p>	The SEA should seek to promote the protection and enhancement of all water resources.
European Commission, Drinking Water Directive (1998/83/EC)	
<p>The objective of the Drinking Water Directive is to protect the health of the consumers in the European Union and to make sure the water is clean and of good quality.</p> <p>To make sure drinking water everywhere in the EU is healthy, clean and tasty, the Drinking Water Directive sets standards for the most common substances (so-called parameters) that can be found in drinking water. A total of 48 microbiological and chemical parameters must be monitored and tested regularly.</p>	The SEA should seek to ensure that objectives address water quality in the region, particularly drinking water quality.
European Commission, Urban Waste Water Treatment Directive (1991/271/EC)	
The Directive's objective is to protect the environment from the adverse effects of urban waste water discharges and discharges from certain industrial sectors and concerns the collection, treatment and discharge of domestic waste water, mixture of waste water and waste water from certain industrial sectors.	The SEA should seek to maintain, protect and improve water quality across the region.
European Economic Community, Directive on Bathing Water (76/160/EEC); and Directive 2006/7/EC repealing Directive 76/160/EEC (from 2014)	
European Commission (1992), Habitats Directive (1992/43/EC)	
The aim of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain or restore natural habitats and wild species listed on the Annexes to the Directive at a favourable conservation status, introducing robust protection for those habitats and species of European importance.	The impacts of the Regional Plan options on internationally designated sites and species must be considered as part of the SEA.
European Economic Community, Groundwater Directive (2006/118/EEC)	

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
The aim of the Directive is to establish measures to prevent and control groundwater pollution, by requiring Member States to utilise the specified criteria for the assessment of good groundwater and chemical status; and for the identification and reversal of significant and sustained trends, including the identification of measures for trend reversals.	The impacts of the Regional Plan options on the management of groundwater bodies and their achievement of good groundwater and chemical status must be considered as part of the SEA.
European Commission (2006) Thematic Strategy for Soil Protection	
The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions, a proposal for a framework Directive (a European law), and an Impact Assessment.	The SEA assessment framework should include soils.
European Economic Community, Marine Strategy Framework Directive (2008/56/EEC)	
<p>This Directive established a framework within which Member States must take the necessary measures to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest.</p> <p>This includes the proposed scope and approach to be taken in the development and implementation of marine strategies by Member States.</p>	The impacts of the Regional Plan options on designated marine environments and species must be considered as part of the SEA.
European Commission, Directive on the Assessment and Management of Flood Risks (2007/60/EC)	
This Directive requires Member States to assess if all water courses and coast lines are at risk from flooding, to map the flood extent and assets and humans at risk in these areas and to take adequate and coordinated measures to reduce this flood risk.	The impacts of the Regional Plan options on existing fluvial, groundwater and coastal flood risk must be considered as part of the SEA.
European Commission (2012), A Blueprint to safeguard Europe's Water Resources	
This document outlines actions that concentrate on better implementation of current water legislation, integration of water policy objectives into other policies, and filling the gaps in particular as regards water quantity and efficiency. This has a long-term aim to ensure sufficient availability of good quality water for sustainable and equitable use.	The implementation of the Regional Plan should seek to facilitate the ongoing reliable availability of good quality water.
European Landscape Convention (Florence Convention)	
The European Landscape Convention is an international convention focusing specifically on landscape. The UK Government signed the European Landscape Convention in 2006 and it became binding from March 2007.	The SEA should take landscape quality into account and include water quality in the assessment framework.

Objectives identified in the Policy, Plan or Programme		Influences on the Regional Plan and the SEA objectives
National		
The Environmental Assessment of Plans and Programmes Regulations 2004 (the SEA Regulations)		
This represents the transposition of the Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive).		This regulation provides the UK regulatory basis for an SEA being carried out as part of the Regional Plan.
Ancient Monuments and Archaeological Areas Act 1979		
This act addresses the protection of scheduled monuments including the control of works affecting scheduled monuments. It also addresses archaeological areas.		The Regional Plan and SEA should take account of the need to protect scheduled monuments and archaeological areas.
The Climate Change Act 2008		
This act sets carbon targets for 2050. The net carbon account for 2050 at least 80% lower than 1990 baseline.		This target needs to be taken into account by the SEA.
The Climate Change Act 2008 (2050 Target Amendment) Order 26 June 2019		
This amendment changed the UK carbon emissions reduction target from an 80% to a 100% reduction		This target needs to be taken into account by the SEA objective for energy use and greenhouse gas emissions, and adaptation to climate change.
Conservation of Habitats and Species Regulations 2017		
<p>These regulations consolidate all the various amendments made to the Conservation (Natural Habitats) Regulations 1994 in England.</p> <p>The regulations provide for the designation and protection of 'European sites', the protection of 'European species', and the adaptation of planning and other controls for the protection of European Sites. They are the principal means by which the Habitats Directive is transposed in England as such its main objective is to promote the maintenance of biodiversity.</p>		The impacts of the Regional Plan options towards species diversity must be considered as part of the SEA.
Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations (2019)		
The Countryside and Rights of Way (CROW) Act, 2000		
<p>The Act provides for increased public access to the countryside and strengthens protection for wildlife.</p> <p>The main provisions of the Act are as follows:</p> <p>Extends the public's ability to enjoy the countryside whilst also providing safeguards for landowners and occupiers</p>		<p>The Regional Plan may have an effect on public access to the countryside.</p> <p>The SEA should include objectives that take into account public access, protection of SSSIs and the management of relevant landscape designations.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>Creates new statutory right of access to open country and registered common Land Use Consultants</p> <p>Modernises Right of Way system</p> <p>Gives greater protection to SSSIs</p> <p>Provides better management arrangements for AONBs</p> <p>Strengthens wildlife enforcement legislation.</p>	
The Natural Environment and Communities Act 2006 (NERC Act)	
<p>This provides the legislative framework to extend 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.</p> <p>Importantly, Section 41 of the Act refers to a published <u>list of habitats and species</u> which are of principal importance for the conservation of biodiversity in England.</p> <p>This duty applies to all utility companies.</p>	<p>There are a range of designated Natural Environment and Rural Communities (NERC) Act Section 41 habitats within the Regional Plan supply area.</p> <p>The Regional Plan may have an effect on NERC habitats and therefore the SEA must include objectives that take these effects into account.</p>
DCLG (2012) National Planning Policy Framework (as amended 2019)	
<p>Presumption in favour of sustainable development. Core planning principles include taking account of the development needs of an area; contribute to conserving and enhancing the environment; re-use of previously developed land; conserve heritage assets; deliver sufficient community facilities to meet local needs. Delivering sustainable development includes:</p> <p>Building a strong competitive economy;</p> <p>Supporting a prosperous rural economy;</p> <p>Promoting sustainable transport; Requiring good design;</p> <p>Promoting healthy communities; Protecting green belt land;</p> <p>Meeting the challenge of climate change, flooding and coastal change;</p> <p>Conserving and enhancing the natural environment;</p> <p>Conserving and enhancing the historic environment;</p> <p>Facilitating the sustainable use of minerals.</p> <p>Reservoirs are included within the definition of open space - of public value due to opportunities</p>	<p>The Regional Plan and SEA should take account of the key components of sustainable development, Also, reservoirs contribute to recreation and visual amenity.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
for sport and recreation and providing a visual amenity.	
Department for Energy and Climate Change (2020) Energy White Paper: Powering our Net Zero Future	Energy White Paper: Powering our Net Zero Future
<p>The white paper outlines a series of policies and commitments made by the government as part of the transition to net zero carbon emissions. The strategies are three fold:</p> <ul style="list-style-type: none"> • Prioritisation of renewable sources energy generation and invest in low-carbon technologies • Supporting a green recovery from COVID-19 through investment in green industries. • Creating a fair deal for consumers through facilitating competition, enhanced regulation and strategies to improve the energy performance of homes. 	<p>The implementation of the Regional Plan may have an influence upon Yorkshire Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p>
Department of energy and climate change (2011) Planning our electric future: a White Paper for secure, affordable and low carbon electricity	Planning our electric future: a White Paper for secure, affordable and low carbon electricity
<p>This white paper outlines a package of reforms so that by 2030 there will be a flexible, smart and responsive electricity system, powered by a range of low carbon sources of electricity. This includes engaging with consumers on energy use. Decarbonisation is important in meeting the 2050 targets.</p>	<p>The implementation of the Regional Plan may have an influence upon Yorkshire Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p>
Defra (2011) Government Review of Waste Policy in England 2011	Government Review of Waste Policy in England 2011
<p>The review is guided by the "waste hierarchy", EU obligations and targets on waste management, carbon impacts, environmental objectives and the costs and benefits of different policy options.</p> <p>The Governments vision include a move beyond the current throwaway society to a "zero waste economy" in which material resources are re-used, recycled or recovered wherever possible, and only disposed of as the option of very last resort.</p>	<p>The Regional Plan may involve options that involve the generation of waste (e.g. either through construction requirements or operation of supply side options). The SEA should seek to enhance recycling and minimise the amount of waste going to landfill.</p>
HM Government (2018) Our Waste, Our Resources: A Strategy for England	Our Waste, Our Resources: A Strategy for England
<p>In response to the 25 Year Environmental Plan, this document sets out a targeted strategy for preserving our stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy</p>	<p>The SEA should take into account effects on resource use and waste and benefits of promoting resource efficiency.</p>
Defra (2017) The UK Climate Change Risk Assessment 2017 Evidence Report	The UK Climate Change Risk Assessment 2017 Evidence Report

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Identifies themes that form the priorities for adaptation in the UK.	The SEA should take into account the need for climate change adaptation.
Defra (2011) Water for Life - Water White Paper	
This sets out market reform in the water sector.	The Regional Plan should take into account the contents of this paper.
Defra (2011) UK National Ecosystem Assessment and Defra, 2014, UK National Ecosystems Assessment Follow on, Synthesis of Key Findings	
<p>Ecosystems services from natural capital contribute to the economic performance of the nation.</p> <p>Information and tools to enable decision makers to understand the wider value of ecosystems and their associated services.</p>	<p>For the purposes of the readership integrating an ecosystems services approach into the SEA is not being undertaken. However, it is realised that through the 'Objective-led' approach, many of the services relevant to the Regional Plan can be considered through the objectives and key questions for example:</p> <p>Provisioning Services: Freshwater</p> <p>Provisioning Services: Biodiversity</p> <p>Regulating Services: Water Regulation</p> <p>Cultural services: Recreation and ecotourism</p> <p>Cultural services: Cultural heritage values</p> <p>Cultural services: Aesthetic</p> <p>The SEA should ensure the Regional Plan effects the related provisioning services in the least damaging way through informing the Regional Plan formulation.</p>
Defra (2010) Making Space for Nature: A Review of England's Wildlife Sites and Ecological Network	
This independent review of England's wildlife sites and the connections between them sets objectives and recommendations to help achieve a healthy natural environment that will allow our plants and animals to thrive.	The SEA should seek to maintain or enhance the quality of habitats and biodiversity.
Defra (2009) Safeguarding our soils – A Strategy for England	
<p>The new Soil Strategy for England – Safeguarding our Soils – outlines the Government's approach to safeguarding our soils for the long term. It provides a clear vision to guide future policy development across a range of areas and sets out the practical steps that we need to take to prevent further degradation of our soils, enhance, restore and ensure their resilience, and improve our understanding of the threats to soil and best practice in responding to them.</p> <p>The Governments vision is that: By 2030, all England's soils will be managed sustainably and</p>	The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
degradation threats tackled successfully. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.	
Defra (2015) The Great Britain Invasive Non-native Species Strategy	
The Strategy is intended to provide a strategic framework, updated from the 2008 framework, within which the actions of government departments, their related bodies and key stakeholders can be better co-ordinated. Its overall aim is to minimise the risks posed, and reduce the negative impacts caused, by invasive non-native species in Great Britain.	The implementation of the Regional Plan may influence biodiversity in the Yorkshire River Basin District and the south east and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.
Natural England (2016), Conservation 21 – Natural England's Conservation Strategy for the 21 st Century	
<p>This strategy sets out a new approach to reverse biodiversity loss, protect natural landscapes for public enjoyment and for the services that they provide. The strategy is based on three guiding principles:</p> <ol style="list-style-type: none"> 1. Creating resilient landscapes and seas 2. Putting people at the heart of the environment 3. Growing natural capital 	The Regional Plan and SEA should seek to ensure that the natural environment and distinctive landscapes are protected and public access to them are maintained.
Defra (2008) Future Water: The Government's water strategy for England	
<p>This strategy is the high level Government document which outlines how the Government wants the water sector to look by 2030, considering issues of water demand, water supply, water quality in the natural environment, surface water drainage, river and coastal flooding, greenhouse gas emissions and charging.</p> <p>that "by 2030 at the latest, we have:</p> <p>Improved the quality of our water environment and the ecology which it supports, and continued to provide high levels of drinking water quality from our taps</p> <p>Sustainably managed risks from flooding and coastal erosion, with greater understanding and more effective management of surface water</p> <p>Ensured a sustainable use of water resources, and implemented fair, affordable and cost-reflective charges.</p>	The SEA should seek to ensure that the themes included in the strategy objectives are also reflected in the SEA objectives, particularly around water quality in the region, the quality of aquatic ecology, drinking water quality, resource use, energy use and greenhouse gas emissions, and adaptation to climate change.
Defra (2007) The Air Quality Strategy for England, Scotland and Wales	

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>This strategy identifies air quality objectives and policy options to further improve air quality in the UK from into the long term. The options are intended to provide important benefits to quality of life and help protect the environment as well as the direct benefits to public health.</p>	<p>The implementation of the Regional Plan may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum.</p>
<p>Defra (2011) Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services</p>	
<p>The objective for the next decade is: 'to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.' Four action areas are:</p> <p>A more integrated large-scale approach to conservation on land and at sea</p> <p>Putting people at the heart of biodiversity policy</p> <p>Reducing environmental pressures</p> <p>Improving our knowledge.</p>	<p>The SEA must consider impacts on biodiversity. The implementation of the Regional Plan may influence biodiversity in the area and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regards of priority species.</p>
<p>Defra (2008) England Biodiversity Strategy –climate change adaptation principles</p>	
<p>Government strategy presenting five principles that are fundamental to conserving biodiversity during climate change. The precautionary principle underlies all the principles.</p>	<p>The SEA must consider the impacts on biodiversity whilst also taking into account the potential for future climate change.</p>
<p>Defra (2005) Making space for water: taking forward a new government strategy for flood and coastal erosion risk management in England</p>	
<p>The strategy outlines how to manage the risks from flooding and coastal erosion in the UK. The strategy aims to reduce the threat of flooding to people and their property, and to deliver the greatest environmental, social and economic benefit, consistent with the Government's sustainable development principles.</p>	<p>The SEA should seek to ensure that flood risk in the region is not adversely affected by the implementation of the Regional Plan.</p>
<p>Defra (2005) Securing the Future: Delivering UK Sustainable Development Strategy</p>	
<p>The strategy for sustainable development aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. The strategy places a focus on protecting natural resources and enhancing the environment.</p>	<p>The SEA must seek to ensure that objectives relating to sustainable development, sustainable resource use and protecting the natural environment, are considered when assessing the potential impacts of the Regional Plan.</p>
<p>Defra (2004) The First Soil Action Plan for England</p>	
<p>This plan is a comprehensive statement on the state of the UK's soils and how Government and other partners were working together to improve them. Ensure that England's soils will be protected and managed to optimise the varied</p>	<p>The SEA should seek to ensure that the quality of the region's land, including soils, is protected or enhanced.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
functions that soils perform for society (e.g. supporting agriculture and forestry, protecting cultural heritage, supporting biodiversity, as a platform for construction), in keeping with the principles of sustainable development.	
Defra (2004) Rural Strategy	
The strategy sets out rural and countryside policy, and draws upon from lessons learnt following the rural white paper. Objectives include supporting economic and social regeneration across rural England and enhance the value of the countryside and protect the natural environment for this and future generations.	The implementation of certain Regional Plan options may have an effect upon rural communities and the countryside. The SEA should also seek to ensure that the quality of the region's landscapes, natural resources and biodiversity are maintained or enhanced.
Defra (2002) The Strategy for Sustainable Farming and Food – facing the future	
This strategy sets out how industry, Government and consumers could work together to secure a sustainable future for our farming and food industries. The strategy's objectives are to support the viability and diversity of rural and urban economies and communities, respect and operate within the biological limits of natural resources (especially soil, water and biodiversity) and achieve consistently high standards of environmental performance by reducing energy consumption, by minimising resource inputs, and use renewable energy wherever possible.	The implementation of the Regional Plan may have some indirect links with the food industry, through ensuring the availability of water for food based activities. The SEA should also seek to promote the most effective use of the region's natural resources, including soil, biodiversity and energy resources.
Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper	
This paper sets out a new approach for protecting and improving the natural environment, developing a green economy and reconnecting people to nature, based on the findings of the UK National Ecosystem Assessment.	The Regional Plan and SEA should seek to ensure that the natural environment and distinctive landscapes are protected and public access to them, are maintained.
Defra (2015) The government's response to the Natural Capital Committee's third State of Natural Capital report	
<p>This provides a number of recommendations such as:</p> <p>Agreement for the development of a 25 year plan for a healthy natural economy. This includes helping organisations understand the economic, social and cultural value the impact their actions have on it and how to use the knowledge for better decisions; identify most important and threatened environmental assets; protection of designated areas; address outstanding monitoring and data issues to enable better decisions about strategic investments in natural capital.</p>	<p>Outputs from the SEA process will help to inform any future potential development by Yorkshire Water of Natural Capital Accounting (NCA) approaches to assessing environmental asset performance.</p> <p>Government (led by HM Treasury and Defra) is increasingly using NCA to support future environmental policy and decision-making, and there may be future expectations on water companies to follow suit.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>Assigning institutional responsibility for monitoring the state of natural capital.</p> <p>Organisations that manage land and water assets should create a register of natural capital for which they are responsible.</p>	
UK Government (2018), A Green Future: Our 25 Year Plan to Improve the Environment	
<p>The 25 Year Plan sets out to deliver cleaner air and water in our cities and rural landscapes, protect threatened species and provide richer wildlife habitats, in addition to tackling the effects of climate change. The 25-year goals include:</p> <ol style="list-style-type: none"> 1. Clean air; 2. Clean and plentiful water; 3. Thriving plants and wildlife; 4. A reduced risk of harm from environmental hazards such as flooding and drought; 5. Using resources from nature more sustainably and efficiently; 6. Enhanced beauty, heritage and engagement with the natural environment; <p>In addition, managing pressures on the environment by:</p> <ol style="list-style-type: none"> 7. Mitigating and adapting to climate change; 8. Minimising waste; 9. Managing exposure to chemicals; and 10. Enhancing biosecurity. 	<p>The Regional Plan and SEA objectives should be consistent with the principles behind the 25-year goals of the plan. The SEA should seek to ensure that the themes included in the 25-year goals are also reflected in the SEA objectives, particularly around air quality, water quality in the region, the quality of aquatic ecology, flood risk, drinking water quality, resource use, energy use and greenhouse gas emissions, adaptation to climate change and landscape and visual amenity.</p>
Defra (2020), The Draft Environment Bill 2020, and content related to the development of Nature Recovery Networks (parts 6 and 7)	
<p>This policy paper provides greater clarity on some of the key changes proposed in the 25 Year Environmental Plan, including:</p> <ul style="list-style-type: none"> - The implications of the requirement for local areas to develop a Local Nature Recovery (LNR) Strategy, in driving the delivery of a National Nature Recovery Network; - New 'biodiversity net gain' measures as part of the planning requirements for new developments; and <p>New measures that will support the design and delivery of strategic approaches for the protection of both species and habitats.</p>	<p>The Regional Plan and SEA objectives for biodiversity should take account of the need to consider impacts towards LNR and NNR strategies and potential for biodiversity net gain.</p>
Natural Capital Committee (2020) State of Natural Capital Annual Report 2020	
<p>This provides an overview of the progress made towards the 10 goals set out in the 25 Year</p>	<p>The Regional Plan and SEA objectives for biodiversity and landscape and visual amenity</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Environmental Plan and reiterates the importance of embedding the natural capital approach in decision making for the areas of natural capital accounts, the National Food Strategy, review of national landscapes, and local nature and national nature recovery strategies.	should take account of the need to consider impacts towards natural capital and biodiversity resources, LNR and NNR strategies, protection and enhancement of designated landscapes.
Department for Culture, Media and Sport (2001) The Historic Environment – A Force for the Future	
This strategy outlines the Governments policy regarding the historic environment. The strategy has key aims and objectives that demonstrate the contribution the historic environment makes to the country's economic and social well-being.	The implementation of the Regional Plan may have an influence on the heritage of the region, particular if options affect surface water levels. The SEA should seek to ensure any adverse effects on heritage assets are minimised or avoided.
The Energy Act 2013	
This provides the legislative framework for delivering secure, affordable and low carbon energy. It includes provisions for decarbonisation,	The implementation of the Regional Plan may have an influence upon Yorkshire Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.
Environment Act, 1995	
The Environment Act set up the EA to manage resources and protect the environment in England and Wales	The SEA should seek to promote the protection and enhancement of all water resources without having negative effects on other aspects of the Environment.
Environment Agency (2014) Corporate Plan 2014 - 2016	
This sets out the EA's priorities for the environment between 2014 and 2016. Priority areas include: A changing climate Increasing the resilience of people, property and businesses to the risks of flooding and coastal erosion Protecting and improving water, land and biodiversity	The SEA should seek to ensure that priorities are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and biodiversity.
Environment Agency (2010), Water Resources Action Plan for England and Wales	
The strategy has four main aims: Adaptation to and mitigation of climate change; A better water environment; Sustainable planning and management of water resources; People valuing water and the water environment	

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Environment Agency (2009), Water Resources Strategy for England and Wales	
<p>This is the national EA strategy for water resource management in the long term. It looks to 2050 and considers the impacts of climate change, the water environment, water resource and valuing water. Aims and objectives include:</p> <p>Ensure water is used efficiently in homes and buildings, and by industry and agriculture</p> <p>Provide greater incentives for water companies and individuals to manage demand</p> <p>Share existing water resources more effectively</p>	<p>The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives, particularly around water resource use and availability in the region.</p>
Environment Agency (2015) Creating a Better Place: Environment Agency Corporate Strategy 2014-2016	
<p>The strategy sets out the EA's ambitions for the environment between 2014 and 2016. Priority areas include:</p> <p>A changing climate</p> <p>Increasing the resilience of people, property and businesses to the risks of flooding and coastal erosion</p> <p>Protecting and improving water, land and biodiversity</p> <p>Improving the way the EA works as a regulator to protect people and the environment and support sustainable growth</p>	<p>The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources. The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and biodiversity.</p>
Environment Agency (2016), Managing Water Abstraction	
<p>This sets out how the EA manages water resources in England and Wales.</p>	<p>The SEA should consider the range of impacts that changes to abstractions could have on the environment, including water bodies, biodiversity, and water users.</p>
Environment Agency, Shoreline Management Plans	
<p>A large-scale assessment of the risks associated with coastal processes with the aim to help reduce these risks to people and the developed, historic and natural environments. Coastal processes include tidal patterns, wave height, wave direction and the movement of beach and seabed materials.</p> <p>The second generation of Shoreline Management Plans (SMPs) are in production, covering the entire 6000 kilometres of coast in England and Wales. This generation of plans aim to incorporate sea level rise resulting from climate change and current defences with limited life and improvement requirements.</p>	<p>The SEA should seek to promote a reduction of the risks identified in the Shoreline Management Plans.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Environment Agency (undated) WFD River Basin Characterisation Project: Technical Assessment Method - River abstraction and flow regulation	
This paper describes the method used to assess the likelihood of river water bodies achieving the relevant WFD objectives as a result of artificial influences on low river flows.	Implementation of the Regional Plan may impact river water quality. The SEA should seek to promote the protection and enhancement of biodiversity and river water quality across the region.
Environment Agency (undated) Hydroecology: Integration for modern regulation	
This paper describes clear way forward in terms of hydroecology and a strategic direction to its development and application.	The Regional Plan and SEA should ensure relevant ecological considerations are integral to water resource evaluation and management decisions across the range of temporal and spatial scales.
The Environmental Damage (Prevention and Remediation) (England) Regulations 2015	
<p>These regulations amend the 2009 regulations and provide additional protection to habitats and species identified on Annexes 1 and 2 of the EC Habitats Directive (92/43/EEC), SSSIs and, in some cases, classified waterbodies from environmental damage where an operator has intended to cause damage or been negligent to the potential for damage.</p> <p>Applies to the most serious categories of environmental damage, including:</p> <p>Contamination of land that results in a significant risk of adverse effects on human health</p> <p>Adverse effects on surface water or groundwater consistent with a deterioration in the water's status</p> <p>Adverse effects on the integrity of a Site of Special Scientific Interest (SSSI) or on the conservation status of species and habitats protected by EU legislation outside SSSIs</p>	The SEA should seek to ensure that the guidance provided by the regulations is considered when assessing the Regional Plan.
Environment Agency (2018) The Environment Agency's approach to groundwater protection	
This document contains position statements which detail the Environment Agency's approach to managing and protecting groundwater. The primary aim of all of the position statements is the prevention of pollution of groundwater and protection of it as a resource.	The Regional Plan and SEA approach to groundwater protection should be compliant with the Environment Agency's approach.
Environment Agency (2021) Water Resources Planning Guideline	
This document provides an update to the 2017 Water Resources Planning Guidelines for water undertakers in England and Wales. The most significant changes are that water companies:	The Regional Plan and SEA should be compliant with the updated requirements of the WRPg.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<ul style="list-style-type: none"> - Should use natural capital in decision-making and provide environmental net gain through their WRMPs; - Should plan to provide a long-term destination for the environment by reducing abstraction where it is causing the most environmental damage. - Are expected to be resilient to any drought of a return period of once in 500 years; and - Take account of regional plans. 	
The Eels (England and Wales) Regulations 2009 (as amended)	
<p>Implement European Council Regulations 1100/2007 establishing measures for the recovery of the stock of European eel. The Regulations will help implement delivery Eel Management Plans. They address eel records and re-stocking, close season and reduction of fishing effort, passage of eels and entrainment.</p> <p>The key objective is to ensure that at least 40% of the potential production of silver eels returns to the sea to spawn. This will be achieved by reducing exploitation of all life-stages of the eel and restoration of their habitats.</p>	<p>The SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species identified. This should include migratory fish species and their migratory passage.</p>
Historic England (2020) Heritage at Risk Register 2020	
<p>Heritage at Risk is a national project that aims to identify the endangered sites (historic buildings and places with increased risks of neglect and decay) and then help secure them for the future.</p>	<p>The SEA should seek to protect and enhance heritage and landscape.</p>
English Heritage, now known as Historic England (2008) Climate Change and the Historic Environment	
<p>Sets out the current thinking on the implications of climate change for the historic environment. It is intended both for the heritage sector and also for those involved in the wider scientific and technical aspects of climate change; in the development of strategies and plans relating to the impact of climate change; or in projects relating to risk assessment, adaptation and mitigation.</p>	<p>The SEA should seek to assess the implications of the Regional Plan in combination with climate change and the potential impacts on heritage and the historic environment.</p>
Flood and Water Management Act, 2010 as amended	
<p>The Flood and Water Management Act 2010 aims to provide better, more comprehensive management of flood risk for people, homes and businesses. It aims improve efficiency in the water industry, improve the affordability of water bills for certain groups and individuals, and help ensure continuity of water supplies to the consumer.</p>	<p>The Regional Plan also aims to ensure continuity of water supplies across the region are maintained.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Historic England (2016) Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment	
Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.	The SEA should consider the potential effects of the Regional Plan on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA.
Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3, 1st Edition	
This provides guidance on managing change within settings of heritage assets. This includes archaeological remains, historic buildings, sites, areas and landscapes.	The SEA should take into account effects on settings of heritage assets.
Historic England (2017) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, 2nd Edition	
This replaces The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 – 1st Edition. It sets out general advice on understanding setting, and how it may contribute to the significance of heritage assets and allow that significance to be appreciated, as well as advice on how views contribute to setting.	The SEA should take into account effects on settings of heritage assets.
HM Treasury Infrastructure UK (2014) National Infrastructure Plan	
<p>The Plan focuses on economic infrastructure: the networks and systems in energy, transport, digital communication, flood protection, water and waste management. These are all critical to support economic growth through the expansion of private sector businesses across all regions and industries, to enable competitiveness and to improve the quality of life of everyone in the UK.</p> <p>The objectives for the water sector are ‘to secure a fair deal for customers while enabling water companies to continue to attract low-cost investment needed to provide the high quality, resilient water services customers want.’</p>	The SEA objectives should take into account the objectives for the water sector presented in this plan.
HM Government (2016) National Infrastructure Delivery Plan 2016-2021, Infrastructure Projects Authority	
The Plan explores the Government’s plans for economic infrastructure for 2016-2021 and the resultant economic benefits.	The SEA objectives should take into account the objectives for the water sector presented in this plan.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
The objectives for the water sector are 'to ensure resilient, sustainable and affordable water and sewerage services'.	
Natural Environment and Rural Communities Act, 2006	
<p>This Act makes provision about bodies concerned with the natural environment and rural communities in connection with wildlife, sites of special scientific interest, National Parks and the Broads.</p> <p>The Natural Environment and Rural Communities Act is designed to help achieve a rich and diverse natural environment and thriving rural communities.</p>	The SEA should seek to maintain or enhance the quality of habitats and biodiversity. The impacts of the Regional Plan on any designated features, as highlighted in the Natural Environment and Rural Communities Act, should be addressed.
Planning (Listed Buildings and Conservation Areas) Act 1990	
This addresses listed buildings including prevention of deterioration and damage and preservation and enhancement of conservation areas.	The Regional Plan and SEA should take account of the need to protect listed buildings and conservation areas.
Salmon and Freshwater Fisheries Act, 1975	
<p>The Act lays down the present basic legal framework within which salmon and freshwater fisheries in England are regulated.</p> <p>Proposals have been made to extend the legislation to apply to more fish species e.g. coarse fish, eel and lamprey species. These proposals are currently under review.</p> <p>The Act covers legislation on fishing methods and related offences, obstructions to fish passage, salmon and freshwater fisheries administration and law enforcement. Proposed extensions to the legislation (under review) include the provision of fish passes and screening of water abstraction and discharge points for coarse fish, eel and lamprey species.</p>	The Act Provides statutory requirements for maintaining fish passage. The SEA will cover fish passage as an element of at least one sustainability objective. The SEA should seek to address any potential issues or effects on existing measures to address fish passage.
The Water Act, 2003 (as amended)	
<p>The Water Act 2003 is in three Parts, relating to water resources, regulation of the water industry and other provisions. The four broad aims of the Act are:</p> <p>The sustainable use of water resources</p> <p>Strengthening the voice of consumers</p> <p>A measured increase in competition</p> <p>The promotion of water conservation.</p>	The implementation of the Regional Plan may have an effect through its role in maintaining supplies of water. The SEA should seek to promote sustainable use of water resources.
The Water Environment (WFD) (England and Wales) Regulations, 2003 (as amended)	

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<p>These Regulations make provision for the purpose of implementing in river basin districts within England and Wales The Water Framework Directive (2000/60/EC) of the European Parliament. The Regulations require a new strategic planning process to be established for the purposes of managing, protecting and improving the quality of water resources.</p>	<p>The SEA should seek to promote the protection and enhancement of all water resources. The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources.</p>
Water Resources Act, 1991 (Amendment) (England and Wales) Regulations 2009 SI3104	
<p>Amends Water Resources Act 1991 by extending the use of Water Protection Zones and Works Notices, in particular to deal with harm to aquatic ecosystems caused by the physical characteristics of a water course or lake, such as quantity, structure and substrate of river/lake bed.</p> <p>Aligns the Water Resources Act with the hydromorphological requirements of the WFD</p>	<p>The SEA should include objectives that cover hydromorphological aspects and seek to ensure that hydromorphological features within the plan are maintained or enhanced.</p>
Wildlife and Countryside Act, 1981 (as amended)	
<p>The Act is the principle mechanism for providing legislative protection of wildlife in Great Britain.</p> <p>Species listed in Schedule 5 of the Act are protected from disturbance, injury, intentional destruction or sale. Other provisions outlaw certain methods of taking or killing listed species. This Act is brought up to date regularly to ensure the most endangered animals are on the schedule.</p> <p>The Act also improved protection for the most important wildlife habitats.</p>	<p>Some aspects of the Regional Plan may have effects on habitats and species in the TWUL supply area and beyond. The SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species and habitats.</p>
UKTAG on the WFD e.g. Phase 3 Review of Environmental Standards	
<p>UKTAG prepares technical guidance designed to facilitate consistent implementation of the WFD in the UK.</p> <p>This report identifies standards for certain chemicals known as specific pollutants, developments in assessments of risk to groundwater, non-native species, standards for flows in rivers, standards for levels in lakes, standards for acidity in rivers and standards in intermittent discharges.</p>	<p>The SEA should seek to ensure that the guidance provided by the plan are considered when assessing the Regional Plan, especially with respect to objectives relating to ecology, water quality and water quantity. The SEA should also ensure the guidance in the plan is used in relation to other related regulations for example the Habitats Directive. The guidance could contribute to the formulation of any criteria for assessing significance of effects.</p>
UK Climate Projections UKCP18. UKCIP, 2018	
<p>The UKCP18 Projections provide a basis for studies of impacts and vulnerability and decisions on adaptation to climate change in the UK over the 21st century. Projections are given of changes to climate, and of changes in the marine and</p>	<p>The Regional Plan does take account of UKCP18 projections as its formulation through the WRMP process which takes account of climate change in its supply and demand projections. The SEA should also use UKCP18 projections in the broader</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>coastal environment; recent trends in observed climate are also discussed.</p> <p>The methodology gives a measure of the uncertainty in the range of possible outcomes; a major advance beyond previous national scenarios</p> <p>The Projections will allow planners and decision-makers to make adaptations to climate change. In order to do so they need as much good information as possible on how climate change will evolve. They are one part of a UK government programme of work to put in place a new statutory framework on, and provide practical support for, adaptation.</p>	<p>assessment of climate change effects and any potential cumulative effects. For example the ecological requirements of aquatic habitats that may be affected by the Regional Plan will also be influenced by climate change.</p>
Defra (2018), The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting	
<p>This second National Adaptation Programme (NAP) sets out the government's response to the second Climate Change Risk Assessment (CCRA). High level actions are presented for addressing the key risks identified, including in relation to the following areas:</p> <ul style="list-style-type: none"> - Flooding and coastal change risks to communities, businesses and infrastructure; - Risks of shortages in the public water supply for agriculture, energy generation and industry; - Risks to natural capital including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity; and <p>New and emerging pests and diseases and invasive non-native species affecting people, plants and animals.</p>	<p>The SEA objectives of the Regional Plan should take into account the key risks identified in this document, for the relevant areas, including towards flood risk, public water supply, ecological resilience, risks to natural capital and INNS.</p>
Water Industry Act 1991 was amended by the commencement of Section 36 of the Flood and Water Management Act 2010	
<p>This makes provision for general duties of water undertakers including those associated with water resources management plans and sets out supply duties.</p>	<p>The Regional Plan must take into account this legislation.</p>
Marine and Coastal Access Act (2009)	
<p>This Act created new powers to protect marine habitats and their wildlife, including:</p> <ul style="list-style-type: none"> • A new marine planning system; • The creation of Marine Conservation Zones; 	<p>The Regional Plan must take into account this legislation.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<ul style="list-style-type: none"> • Changes to the management of inshore fisheries at national and local level; • Designation of an Exclusive Economic Zone; • Changes to the system for managing migratory and freshwater fish; and • Enabling greater recreational access to the English and Welsh coasts. 	
UK Marine Policy Statement (2011)	
This is a framework for supporting the formulation of Marine Plans and sets out the UK vision for the marine environment and policy objectives for the key objectives that occur within the marine environment.	The SEA objectives of the Regional Plan should take into account the UK vision and policy objectives in this document.
Defra (2020) Draft North East Inshore and East Offshore Marine Plans (for consultation)	
<p>These plans seek to provide certainty and clarity for developers seeking to build in marine environments, by indicating areas to consider or avoid and facilitate an integrated and holistic approach to the planning and management of coastal areas. Four key aims include:</p> <ol style="list-style-type: none"> 1. This plan introduces a strategic approach to planning within the inshore and offshore waters between the Scottish border and Flamborough Head, in Yorkshire; 2. Applies national policies in a local context, ensuring the needs and aspirations of both of the marine plan areas are reflected; 3. Enable activities to move more quickly from concept to consent by identifying areas suitable for investment, encouraging earlier and clearer communication between developers and regulatory decision-makers; and 4. Implementation of the plan's policies, through more informed decision-making, will help to optimise use of the marine area's natural capital and realise greater enhancement and protection of vulnerable habitats and species, and natural defences against climate change and flooding. 	The SEA objectives of the Regional Plan should take into account the aims of the marine plan, particularly in relation to the drive for enhancement and protection of vulnerable habitats and species, and natural defences against climate change and flooding.
Defra and Environment Agency (2014) Understanding the risks, empowering communities, building resilience: The National Flood and Coastal Erosion Risk Management Strategy for England	
This strategy builds on existing approaches to flood and coastal risk management and promotes	The SEA objectives of the Regional Plan should take into account the long-term ambitions in this document.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
the use of a wide range of measures to manage risk.	
National Flood and Coastal Erosion Risk Management Strategy for England (2020)	
<p>This updated strategy describes what needs to be done by all risk management authorities, including water and sewerage companies, involved in flood and coastal erosion risk management. It has 3 long-term ambitions:</p> <ol style="list-style-type: none"> 1. Climate resilient places: improving resilience to flooding and coastal change; 2. Making the right investment and planning decisions to secure sustainable growth, environmental improvements and infrastructure resilient to flooding and coastal change; and 3. Educating local communities to make sure that they understand their risk to flooding and coastal change, 	The SEA objectives of the Regional Plan should take into account the long-term ambitions in this document.
The Water Resources Management Plan Regulations 2007	
This provides the legislation for the preparation of water resources management plans.	The Regional Plan should take account of these requirements.
National Policy Statement for Wastewater (2012)	
<p>This document sets out Government policy for the provision of major waste water infrastructure. The seven key policy objectives include:</p> <ol style="list-style-type: none"> 1. Sustainable development; 2. Public health and environmental improvement; 3. To improve water quality in the natural environment; 4. To reduce water consumption; 5. To reduce the demand for waste water infrastructure capacity; 6. Climate change mitigation and adaptation; and 7. Waste hierarchy. 	The SEA should seek to ensure that strategy objectives are also reflected in the SEA objectives particularly regarding maintaining, protecting and improving water quality across the region and ensure efficient use of resources.
Water UK (2016) Water Resource Planning Framework (2015-2065)	
This report details a strategic approach to securing water supplies by balancing enhanced supply infrastructure and demand management, based on consultation with companies, regulators, academics and NGOs.	The development of the Regional plan, including decision-making processes should take the strategic advice of this report into account when prioritising its preferred schemes.
Defra (2018) Draft National Policy Statement for Water Resources Infrastructure (as amended per consultation in 2018 and 2019)	
The draft NPS sets out a framework for DEFRA and the Planning Inspectorate when considering development consent applications for nationally	The decision-making process for determining which schemes should be prioritised in the

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
significant water resources infrastructure in England and Wales. Importantly, this policy document sets out the thresholds for assets including reservoirs, water transfers and desalination plants, which warrant application of the NSIP process.	Regional Plan should take this policy document into account.
National Infrastructure Commission (2018) Preparing for a drier future: England's water infrastructure needs	
This document sets out the National Infrastructure Commission's advice on how to address England's water supply challenges and deliver the appropriate level of resilience for the long term. Included in this study are high level recommendations for demand management measures (including leakage reduction) and long-term investment needed in the water supply infrastructure for England and Wales.	The decision-making process for determining which schemes should be prioritised in the Regional Plan should take this policy document into account.
Environment Agency (2020) Meeting our future water needs: A national framework for water resources	
<p>The national framework explores England's long term water needs for:</p> <ul style="list-style-type: none"> • Public water supplies; • agriculture; • the power and industry sectors; and • environmental protection <p>The national framework report marks a move to strategic regional planning, which would be comprised of 5 regional groups (made up of the 17 English water companies and other water users)</p>	The regional plan should consider the needs of the whole region and of other water users, in line with the expectations of this policy paper.
HM Treasury (2020) National Infrastructure Strategy	
<p>This Strategy sets out the government's plans to deliver on their ambition for a radical improvement in the quality of the UK's infrastructure and to put the UK on the path to net zero emissions by 2050.</p> <p>The planned investment in the water and flood risk management sector is illustrated in light of the 25 Year Environmental Plan and the second National Adaptation Programme.</p>	The decision-making process for determining which schemes should be prioritised in the Regional Plan should take this policy document into account.
Regional	
<p>Biodiversity Action Plans</p> <p>North York Moors National Park Biodiversity Action Plan 2013-2017</p> <p>Yorkshire Dales National Park Local Biodiversity Action Plan (LBAP) 'Nature in the Dales: 2020 Vision'</p>	

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Northumberland National Park Biodiversity Action Plan Tees Valley Biodiversity Action Plan The Newcastle Biodiversity Action Plan North Tyneside Biodiversity Action Plan The Northumberland Biodiversity Action Plan The Durham Biodiversity Action Plan	
Local biodiversity action plan objectives include those associated with maintaining and safeguarding the current extent of protected designations and recognised habitats and achieving favourable status for these areas.	The Regional Plan may have an effect on BAP objectives. The SEA should include objectives that take into account the objectives of the BAP where relevant (e.g. conservation designation status).
Yorkshire Dales National Park (2016) Local Plan 2015-2030	
The Yorkshire Dales Local Plan 2015 to 2030 is a strategy for new development in the National Park. It sets out local policy to steer development decisions and guide planning applications	The SEA should take the objectives of this plan into account.
Historic England, Heritage at Risk Register: North East & Yorkshire (2020)	
The Heritage at Risk Register is produced annually and documents the buildings and structures, places of worship, archaeological sites, battlefields, wrecks, parks and gardens, and conservation areas known to be at risk in the region.	It is unlikely the Regional Plan will have an effect on the Heritage at Risk Register.
Environment Agency (2016) Humber river basin district flood risk management plan 2015-2021	
Social objectives Understanding Flood Risk and Working in Partnership Community Preparedness and Resilience Reduce Community Disruption Flood Risk and Development Reduce risk to people Economic objectives Reduce economic damage Maintenance of main river and existing assets Transport Services Flood risk to agricultural land Tourism Environmental objectives Water Framework Directive Designated Nature Conservation Sites	The Regional Plan may have an effect on FRMP objectives. The SEA should include objectives that take into account the objectives of the FRMP where relevant (e.g. WFD status).

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Designated Heritage sites Reservoir objectives Reservoir flood risk	
Environment Agency, CAMS (various)	
<p>The Water Framework Directive's main objectives are to protect and enhance the water environment and ensure the sustainable use of water resources for economic and social development. Catchment Abstraction Management Strategies (CAMS) set out how we will manage the water resources of a catchment and contribute to implementing the WFD.</p> <p>CAMS contribute to the WFD by:</p> <ul style="list-style-type: none"> providing a water resource assessment of rivers, lakes, reservoirs, estuaries and groundwater referred to as water bodies under the WFD; identifying water bodies that fail flow conditions expected to support good ecological status; preventing deterioration of water body status due to new abstractions; providing results which inform River Basin Management Plans (RBMPs) 	<p>Operation of the Regional Plan may have the potential to affect several of the CAMS objectives. The SEA will include objectives that take into account the objectives of the CAMs where relevant.</p>
Forest of Bowland AONB, Forest of Bowland Area of Outstanding Natural Beauty Management Plan 2019-2024	
<p>Objectives include those associated with conserving and enhancing the AONB.</p>	<p>Operation of the Regional Plan may have the potential to affect several of the objectives for managing the Forest of Bowland AONB. The SEA will include objectives that take into account the objectives of the Forest of Bowland AONB management where relevant.</p>
Hadrian's Wall Heritage Ltd, Hadrian's Wall Management Plan 2014 – 2019 (2014)	
<p>Management of the world heritage site</p> <p>Boundaries of the world heritage site and its buffer zone</p> <p>Protection of the world heritage site</p> <p>Protection of undesignated archaeological remains</p> <p>Metal detecting</p> <p>Risk preparedness and disaster management</p> <p>Conservation of archaeological sites</p> <p>Rural land management</p> <p>Archaeological research</p>	<p>It is unlikely the Regional Plan will have an effect on the objectives of Hadrian's Wall Management Plan.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>Sustainable transport and physical access</p> <p>Developing the visitor experience and understanding of the world heritage site</p> <p>Sustainable development and prosperity</p> <p>Engaging with communities</p> <p>Marketing the world heritage site</p> <p>Education and learning</p>	
Howardian Hills AONB Joint Advisory Committee, Howardian Hills Area of Natural Beauty Management Plan 2019-2024	
Objectives include those associated with conserving and enhancing the AONB.	Operation of the Regional Plan may have the potential to affect several of the objectives for managing the Howardian Hills AONB. The SEA will include objectives that take into account the objectives of the Howardian Hills AONB management where relevant.
Lake District National Park Authority, A Vision for 2030 (2006)	
<p>A prosperous economy</p> <p>World class visitor experiences</p> <p>Vibrant communities</p> <p>A spectacular landscape, its wildlife and cultural heritage</p>	The Regional Plan may have an effect on the National Park objectives. The SEA should include objectives that take into account the objectives of the Lake District National Park where relevant (e.g. achieving excellent visitor experiences, spectacular landscape and wildlife).
Leeds City Council, Core Strategy (2019)	
<p>Environmental objectives are listed below:</p> <p>Managing Environmental Resources: In safeguarding the environment of the District, the Core Strategy needs to:</p> <p>Protect natural habitats and take opportunities to enhance biodiversity through the creation of new habitats and by improving and extending wildlife corridors.</p> <p>Secure development which has regard to its impact on the local environment and is resilient to the consequences of climate change, including flood risk.</p> <p>Promote opportunities for low carbon and energy efficient heat and power, for both new and existing development.</p> <p>Make efficient use of natural resources, including the implementation of sustainable design and construction techniques, the use of minerals, and the effective minimisation and management of waste.</p>	The Regional Plan may have an effect on the Core Strategy objectives. The SEA should include objectives that take into account the objectives of Leeds Core Strategy where relevant (e.g. protecting natural habitats).

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Protect and enhance Green Infrastructure, strategic green corridors, green space, and areas of important landscape character, taking the opportunity to improve their quality, connectivity and accessibility through the development process.	
Leeds City Region Local Authority Green Infrastructure Strategies (2010)	
<p>The plan aims to maintain and enhance green infrastructure to:</p> <p>Address climate change adaptation and mitigation</p> <p>Tackle flood alleviation and water management</p> <p>Improve quality of place</p> <p>Improve physical and mental health</p> <p>Sustain economic growth and investment</p>	The SEA will take these objectives into account where the Regional Plan may have an effect on green infrastructure.
Natural England (2014) Site Improvement Plans (SIPs) for National Site Network	
<p>Site improvement plans: Yorkshire & Humber</p> <p>This SIP includes the priorities and new measures required to achieve water-dependent National Site Network objectives under the Water Framework Directive. The actions in this SIP for the water dependent (excluding non-water dependent) habitats inform part of the River Basin Management Plan and its consultation.</p> <p>Specific objectives for each National Site Network site relating to species and habitats.</p>	<p>The Regional Plan may have an effect on Site Improvement Plans (SIPs) for National Site Network and the Humber RBMP.</p> <p>The SEA should include objectives that take into account the objectives of the National Site Network and the Humber RBMP where relevant (e.g. WFD status).</p>
Natural England National Character Area (NCA) Profiles	
<p>There are over 20 NCAs within Yorkshire Waters operating boundary. Each of these have individual objective relating to specific landscapes, habitats and species.</p> <p>Generalised objectives for each of these include:</p> <p>Conserve characteristic historic structures</p> <p>Protect the area's rich and diverse archaeology</p> <p>Protect the area's high levels of tranquillity</p> <p>Protect, manage and enhance the good rights of way network</p> <p>Manage and enhance existing habitats</p> <p>Encourage the maintenance of traditional land management practices</p> <p>Protect, and encourage sympathetic management</p> <p>Protect and manage geological features</p>	The Regional Plan may have an effect on NCAs. The SEA should include objectives that take into account the objectives of the NCAs where relevant (e.g. manage and enhance existing habitats).

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Plan for climate change mitigation and adaptation	
Nidderdale AONB, Nidderdale Area of Outstanding Natural Beauty Management Plan 2019-2024	
Objectives include those associated with conserving and enhancing the AONB.	Operation of the Regional Plan may have the potential to affect several of the objectives for managing the Nidderdale AONB. The SEA will include objectives that take into account the objectives of the Nidderdale AONB management where relevant.
North East Local Enterprise Partnership (2019) More and Better Jobs: A strategic economic plan for the North East	
<p>The plan lists aims to have 100,000 more jobs in the North-East by 2024.</p> <p>Reduce the gap in private sector employment density by 50% by 2024.</p> <p>Close the gap in the employment rate for people aged 16-64 by 100% by 2024.</p> <p>Reduce the gap in economic activity for people aged 16-64 by 50% by 2024.</p> <p>Reduce the gap in productivity by 50% by 2024.</p>	Unlikely that these objectives will be effected by the objectives of the Regional Plan SEA.
North Pennines AONB Partnership, The North Pennines Area of Natural Beauty Management Plan 2019-2024	
Objectives include those associated with conserving and enhancing the AONB.	Operation of the Regional Plan may have the potential to affect several of the objectives for managing the North Pennines AONB. The SEA will include objectives that take into account the objectives of the North Pennines AONB management where relevant.
North York Moors (2016) Local Development Scheme	
Each Local Development Document produced will be subject to SEA/SA to ensure that they reflect the principles of sustainable development and that the effects of the document on sustainability can be monitored.	The Regional Plan may have the potential to affect the of the objectives of the LDS. The SEA will include objectives that take into account the objectives of the LDS where relevant.
North York Moors National Park Authority (2020) Local Plan	
<p>The Environment based objectives of the plan are as follows:</p> <p>Secure high quality new development that is well designed, reinforces local distinctiveness and enhances the unique landscape character, settlement pattern and architecture of the National Park, including through protection of important views.</p> <p>Safeguard and improve the sense of tranquillity and remoteness in the National Park. Maintain</p>	The SEA should take the objectives of this plan into account.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>and improve the darkness of night skies seen in the National Park.</p> <p>Conserve and, where appropriate enhance historic assets and protect valued open spaces within villages.</p> <p>Conserve and enhance the biodiversity and geodiversity of the National Park and improve habitat connectivity.</p> <p>Conserve and enhance soil, air and water quality.</p> <p>Reduce the causes of climate change and assist in the adaption to and mitigation of its effects including through promotion of sustainable design and efficient energy use in new buildings.</p>	
North York Moors Park Authority (2012) National Park Management Plan, (2016) Amendment Sheet	
<p>The Plan aims to achieve the long-standing vision for the Park:</p> <p>A place managed with care and concern for future generations.</p> <p>A place where the diversity and distinctiveness of the landscape, villages and buildings is cherished.</p> <p>A place where biological and cultural diversity, and other special qualities are conserved and enhanced.</p> <p>A place where the environment and way of life is respected and understood.</p> <p>A place where communities are more self-sustaining and economic activity engenders environmental and recreational benefits.</p> <p>A place that is special to people and that provides pleasure, inspiration and spiritual well-being; where calm and quality of life are celebrated.</p> <p>A place where visitors are welcome and cultural and recreational opportunities and experiences are accessible.</p> <p>A place that continues to adapt to change whilst National Park purposes continue to be furthered and pursued.</p> <p>A place where natural resources are managed sustainably and environmental limits are recognised.</p>	<p>The Regional Plan may have the potential to affect the objectives of the National Park Management Plan. The SEA will include objectives that take into account the objectives of the National Park Management Plan where relevant.</p>
Peak District National Park Authority (2018) Peak District National Park Management Plan 2018 – 2023	
The intentions of the plan are as follows:	The Regional Plan may have the potential to affect the objectives of the National Park

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>Reduce the effects of climate change on the special qualities.</p> <p>Secure funding for future land management to benefit all.</p> <p>Ensure that the management of upland moors delivers environmental, social & economic benefits.</p> <p>Establish monitoring at a landscape scale.</p> <p>Develop a White Peak Partnership.</p> <p>Maintain existing landscape scale delivery.</p> <p>Overcome physical barriers to access.</p> <p>Overcome perceived barriers to access.</p> <p>Balance opportunities for enjoyment with conserving a fragile environment.</p> <p>Ensure shared responsibility.</p> <p>Develop an awareness and understanding of the benefits of the Peak District National Park.</p> <p>Supporting thriving and sustainable communities and economy.</p> <p>Improve access to services.</p> <p>Support the provision of locally needed housing.</p> <p>Enable local businesses to thrive in a way that is compatible and, wherever possible, enhances the special qualities of the Peak District National Park.</p>	<p>Management Plan. The SEA will include objectives that take into account the objectives of the National Park Management Plan where relevant.</p>
Public Rights of Way Improvement Plans (ROWIPs)	
<p>Objectives include those associated with each local authority's rights of way improvement plans.</p>	<p>Operation of the Regional Plan may have the potential to affect the objectives of the ROWIPs. The SEA will include objectives that take into account the objectives of the ROWIPs where relevant.</p>
Yorkshire Dales National Park Authority (2019) Yorkshire Dales National Park Management Plan 2019-2024	
<p>By 2040, the Yorkshire Dales National Park will be:</p> <ul style="list-style-type: none"> • A distinctive, living, working, cultural landscape that tells the on-going story of generations of people interacting with their environment; • A friendly, open, and welcoming place with outstanding opportunities to enjoy its special qualities; • Home to the finest variety of wildlife in England; 	<p>Operation of the Regional Plan may have the potential to affect several of the ambitions for the management of the Yorkshire Dales National Park. SEA will include objectives that take into account the ambitions for the management of the Yorkshire Dales National Park where relevant (e.g. landscape quality and character, historic and cultural features, habitats and biological diversity, climate change and better use of resources).</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<ul style="list-style-type: none"> • Resilient and responsive to the impacts of climate change, storing more carbon each year than it produces; • Providing an outstanding range of benefits for the nation based on its natural resources, landscape and cultural heritage, which underpin a flourishing local economy; • Home to strong, self-reliant and balanced communities with good access to the services they need. 	
Drought Plans from adjacent water companies	
See Drought Plan.	The Regional Plan will take into account the objectives of Yorkshire Water's Drought Plan.
Water Resources Management Plans from adjacent water companies	
These set out the plans to manage water resources by companies in adjacent areas.	The Regional Plan should not conflict with the other water company operations especially drought options that may be operated simultaneously.
Humberhead Levels Partnership (2011) Humberhead Levels Nature Improvement Area Business Plan	
<p>Objectives of the Plan:</p> <ol style="list-style-type: none"> 1 Creation of key habitats of the inner estuary in additional sites 2 Achieve sustainable water management in an arable landscape through enhancement of riparian habitats along connecting rivers and drains. 3 Increase the hydrological integrity of England's largest lowland mire system. 4 Deliver sustainable management of existing biodiversity assets via developing the local green economy 5 Increase community links to biodiversity sites to raise voluntary support for site management, heritage conservation and interpretation 	The Regional Plan will take into account the objectives of the plan.
The North East England Nature Partnership	
The partnership brings together 7 of the regions Local Authorities, NGO's, business and Defra agencies to achieve environmental growth by investing in natural capital, as envisioned in the 20-year Vision for Environmental Growth. Four key objectives include:	The Regional Plan will take into account the objectives of the partnership.

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<ol style="list-style-type: none"> 1. Increase natural capital and biodiversity resources by restoring the natural environment. 2. For communities to have regular access and exposure to biodiversity landscapes to enhance health and wellbeing. 3. Achieve economic growth that is environmentally sustainable. 4. For every child in the North East to benefit from access to outdoor learning through their school life. 	
Environment Agency (2016) Water for life and livelihoods. Part 1: Northumbria River Basin District River Basin Management Plan	
<p>The significant water management issues include:</p> <ol style="list-style-type: none"> 1. Physical modifications, affecting 38% of water bodies; 2. Pollution from wastewater, affecting 13% of water bodies; 3. Pollution from rural areas, affecting 10% of water bodies 4. Pollution from abandoned mines, affecting 9% of water bodies; 5. Pollution from towns, cities and transport, affecting 4% of water bodies; 6. Changes to the natural flow and level of water, affecting 2% of water bodies; 7. Negative effects of INNS, affecting 1% of water bodies; 	<p>The SEA should include objectives that take into account the water management issues demonstrated in the Northumbria RBMP where relevant (e.g. WFD status).</p>
Northumberland Coast AONB Management Plan 2020-2024	
<p>Objectives include those associated with conserving and enhancing the AONB.</p>	<p>Operation of the Regional Plan may have the potential to affect several of the objectives for managing the Northumberland Coast AONB. The SEA will include objectives that take into account the objectives of the Northumberland AONB management where relevant.</p>
Northumberland National Park Authority (2016) Northumberland National Park Management Plan 2016-2021	
<p>The strategic aims of the plan are as follows:</p> <ol style="list-style-type: none"> 1. A welcoming park; enhancing the accessibility to the public 2. A distinctive place; safeguarding of the natural qualities and diverse habitats 3. A living, working landscape for now and the future; improved approaches to sustainable land and water management 4. Thriving communities; existing infrastructure supports communities with a high quality of life and improved health and wellbeing 	<p>The Regional Plan may have the potential to affect the objectives of the National Park Management Plan. The SEA will include objectives that take into account the objectives of the National Park Management Plan where relevant.</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>5. A valued asset; the national parks makes a significant contribution to a broader network of protected areas.</p>	
<p>Newcastle City Council (2015) Planning for the Future - Core Strategy and Urban Core Plan for Gateshead and Newcastle upon Tyne 2010-2030</p>	
<p>Environmental objectives based on the strategic policies for people and place and minerals and waste are summarised below:</p> <p>The wellbeing and health of communities will be maintained and improved by: creating an inclusive built and natural environment; preventing negative impacts on residential amenity and wider public safety from noise, ground instability, ground and water contamination, vibration and air quality; and promoting access for all to green spaces, sports facilities, play and recreation opportunities.</p> <p>Development will contribute to good place-making through the delivery of high quality and sustainable design, and the conservation and enhancement of the historic environment. This will be achieved by development: respecting and enhancing significant views and the setting of heritage assets; promoting the use, enjoyment and understanding of the historic environment; positively responding to those heritage assets which are at risk, and not leaving heritage assets at risk, or vulnerable to risk; and where appropriate positively adapting heritage assets to ensure the continued contribution to quality of place.</p> <p>Development will be sustainable, able to function effectively in a changing climate and address impacts on climate change emissions. Development will be required to: minimise its contributions and provide resilience to the ongoing and predicted impacts of climate change; reduce its whole-life CO2 equivalent emissions impact; and optimise the use of local renewable or low carbon energy.</p> <p>Development will avoid and manage flood risk from all sources, taking into account the impact of climate change over its lifetime. Development will avoid and manage flood risk to people and property by:</p> <ol style="list-style-type: none"> i. Locating new development in areas with the lowest risk where appropriate by applying the Sequential Test, ii. Managing flood risk from development to ensure that the risk is not increased on site and/or 	<p>The Regional Plan may have an effect on the Core Strategy objectives. The SEA should include objectives that take into account the objectives of the Core Strategy and Urban Core Plan where relevant (e.g. protecting natural habitats).</p>

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
<p>elsewhere, where appropriate by applying the Exception Test,</p> <p>iii. Ensuring opportunities for development to contribute to the mitigation of flooding elsewhere are taken,</p> <p>iv. Prioritising the use of Sustainable Drainage Systems (SuDS), given the multifunctional benefits to water quality, green space and habitat enhancement,</p> <p>v. Ensuring development is in accordance with the Council's Strategic Flood Risk Assessment, and</p> <p>vi. Requiring a Flood Risk Assessment for sites over 0.5ha in Critical Drainage Areas as identified in the Council's Strategic Flood Risk Assessments.</p> <p>Policy CS18 Green Infrastructure and the Natural Environment</p> <ol style="list-style-type: none"> 1. Maintaining, protecting and enhancing the integrity, connectivity, multifunctionality and accessibility of the Strategic Green Infrastructure Network. 2. Protection, enhancement and management of green infrastructure assets which include: <ol style="list-style-type: none"> i. Biodiversity and geodiversity assets, including designated sites, designated wildlife corridors and priority habitats and species, ii. Distinctive landscape character, recognising the particular importance of our rivers and topography, and iii. Trees, woodland and hedgerows. 3. Addressing gaps in the network and making improvements in Opportunity Areas. 4. Improving and extending linkages to and within the Strategic Green Infrastructure Network. 5. Protecting and enhancing open spaces, sport and recreational facilities in accordance with agreed standards in line with National Policy. 6. Improving access to, along and onto the River Tyne and tributaries, without adversely impacting on the local ecology or damaging the river banks. 	

Objectives identified in the Policy, Plan or Programme	Influences on the Regional Plan and the SEA objectives
Assist in urban regeneration in the city-region by encouraging the recycling of derelict and other urban land.	
Local	
WRMPs from adjacent water companies	
These include: Anglian Water Northumbrian Water Severn Trent Water United Utilities	The Regional Plan and SEA to take these into account.
River Restoration and Water Level Management Plans	
Natural England (2013) Restoring the River Wharfe SSSI: A River Restoration Plan Natural England (2010) Restoring the Yorkshire Derwent Environment Agency (2014) Pevensey Levels SSSI: Water Level Management Plan	The Regional Plan may have an effect on River Restoration Plans for non-National Site Network sites. The SEA should include objectives that take into account the objectives of these sites where relevant.
Local and Strategic Flood Risk Management Strategies for cities within the North East areas of the Regional Plan	
Durham City Council Local Flood Risk Management Strategy 2016-2020 (2020) Hartlepool Local Flood Risk Management Strategy (2016) Newcastle City Council Local Flood Risk Management Plan (2016) Gateshead Council Level 1 Strategic Flood Risk Assessment (2019) Sunderland Council Level 1 Strategic Flood Risk Assessment (2020) Tyne Catchment Flood Management Plan: Managing Flood Risk	The Regional Plan may have an effect towards flood risk in these areas. The SEA should include objectives that take into account the existing flood risk at the local level.

Appendix B – Environmental Baseline Supporting Information

Figure B1 Ecological Designations

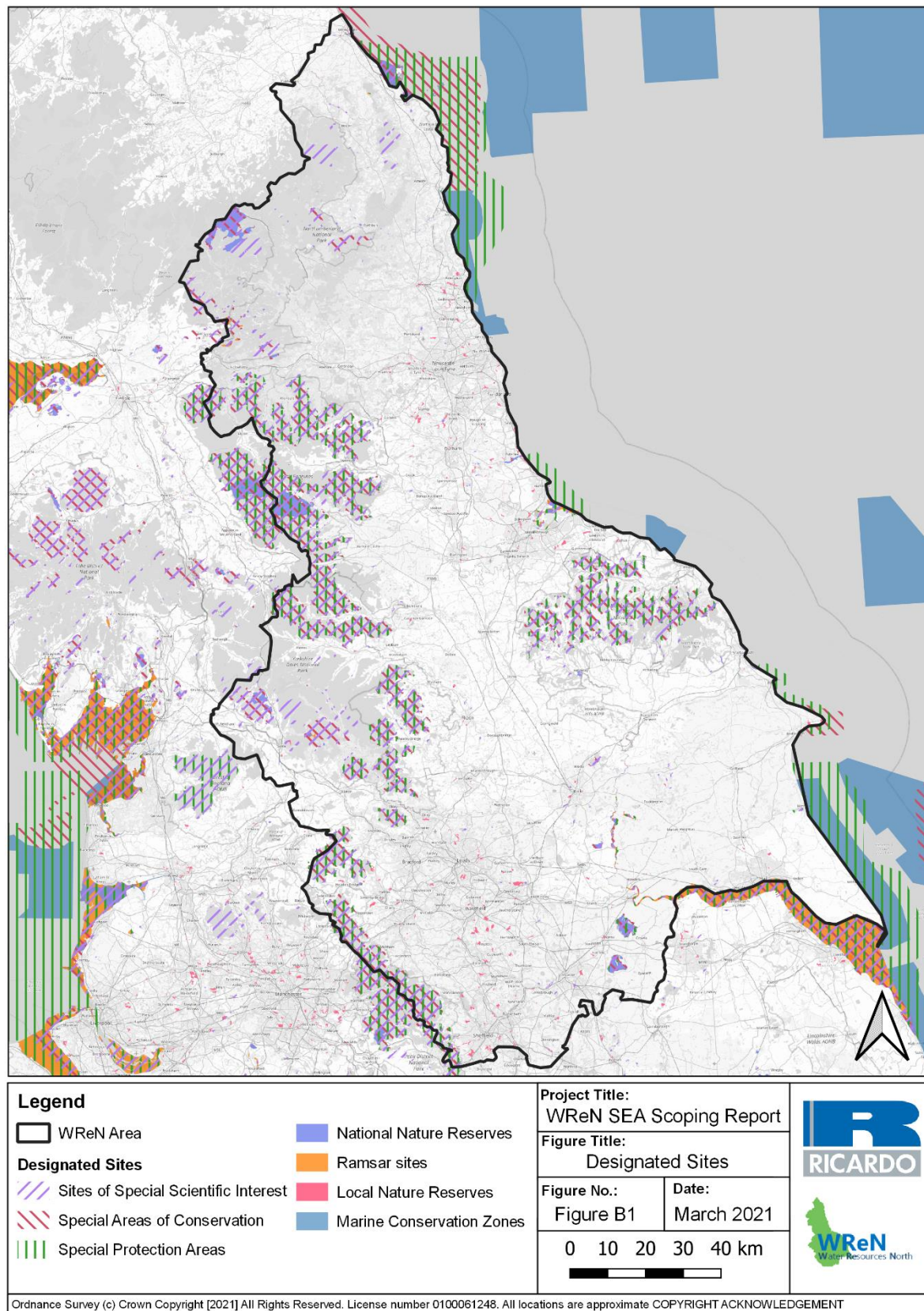
Figure B2 Aquifer Productivity

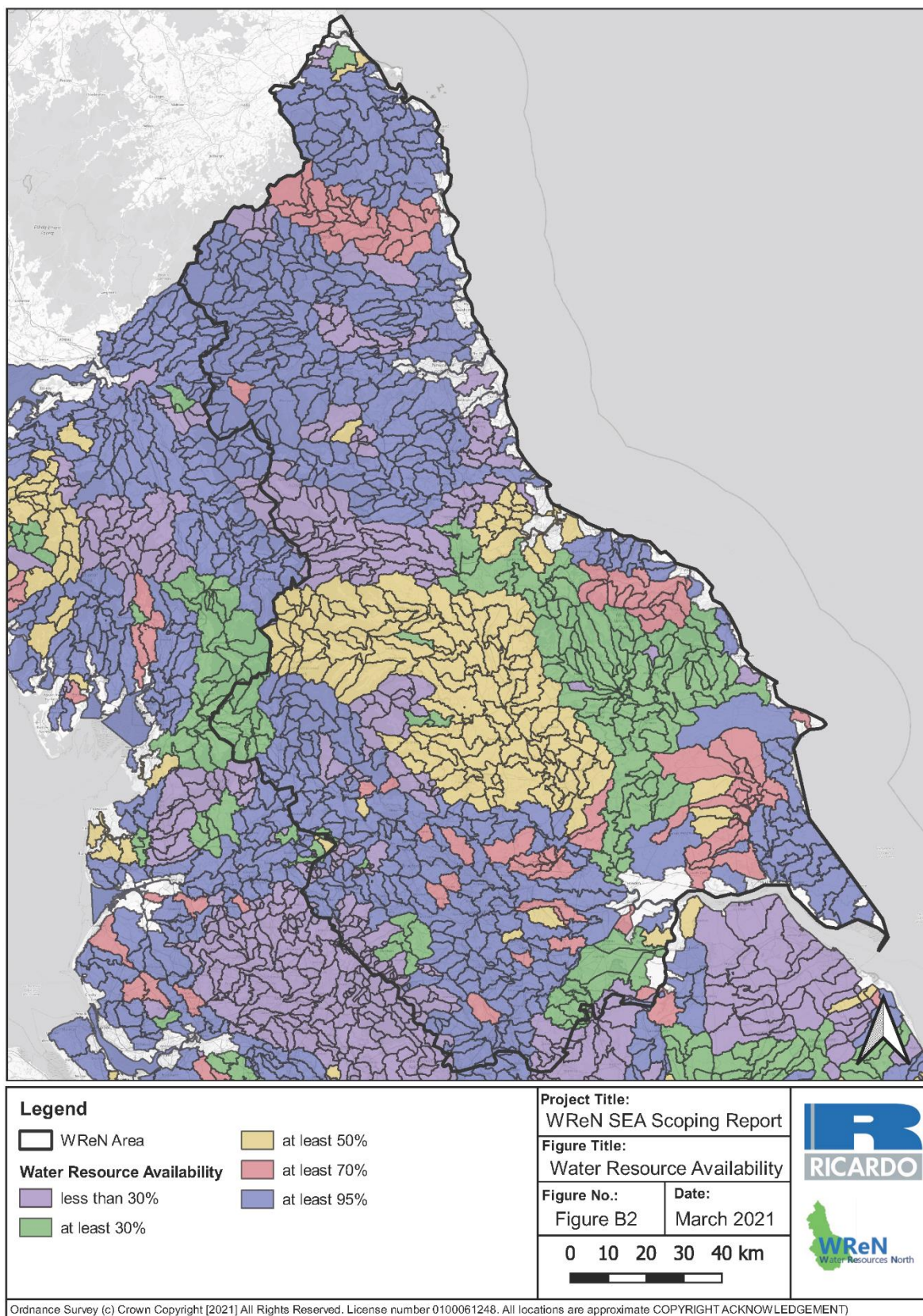
Figure B3 Agricultural Land Classification

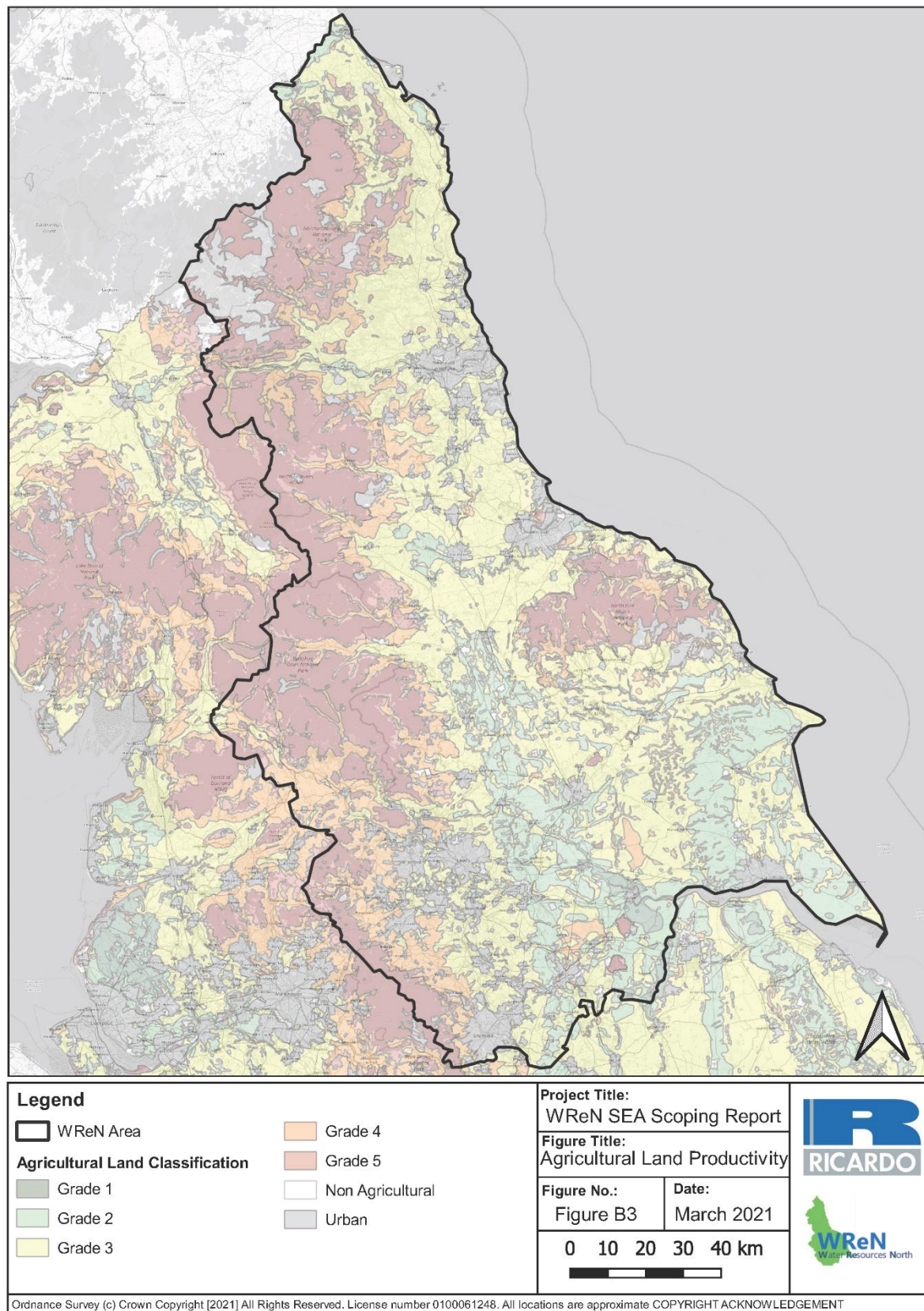
Figure B4 Air Quality Management Areas

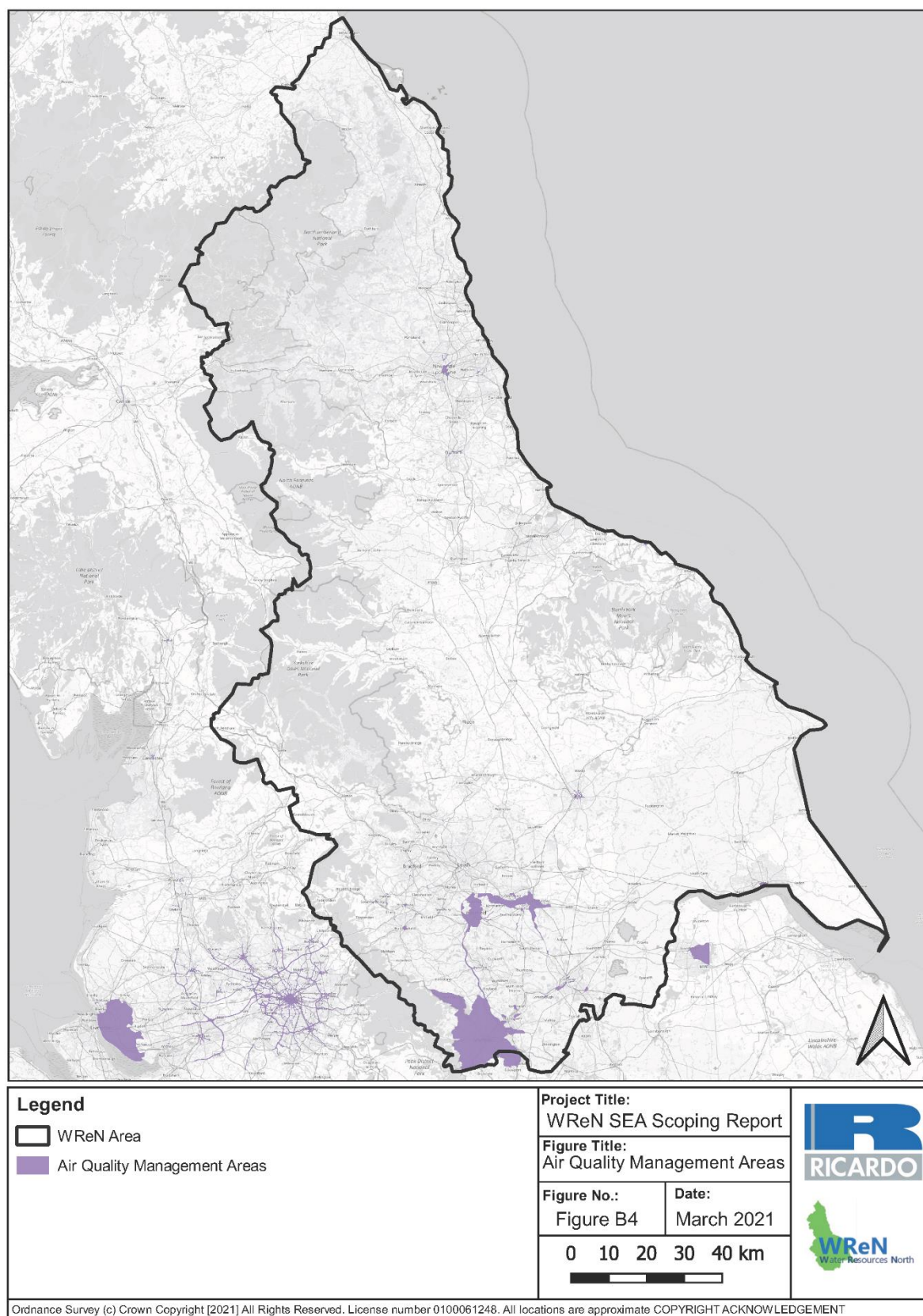
Figure B5 Designated Heritage Assets

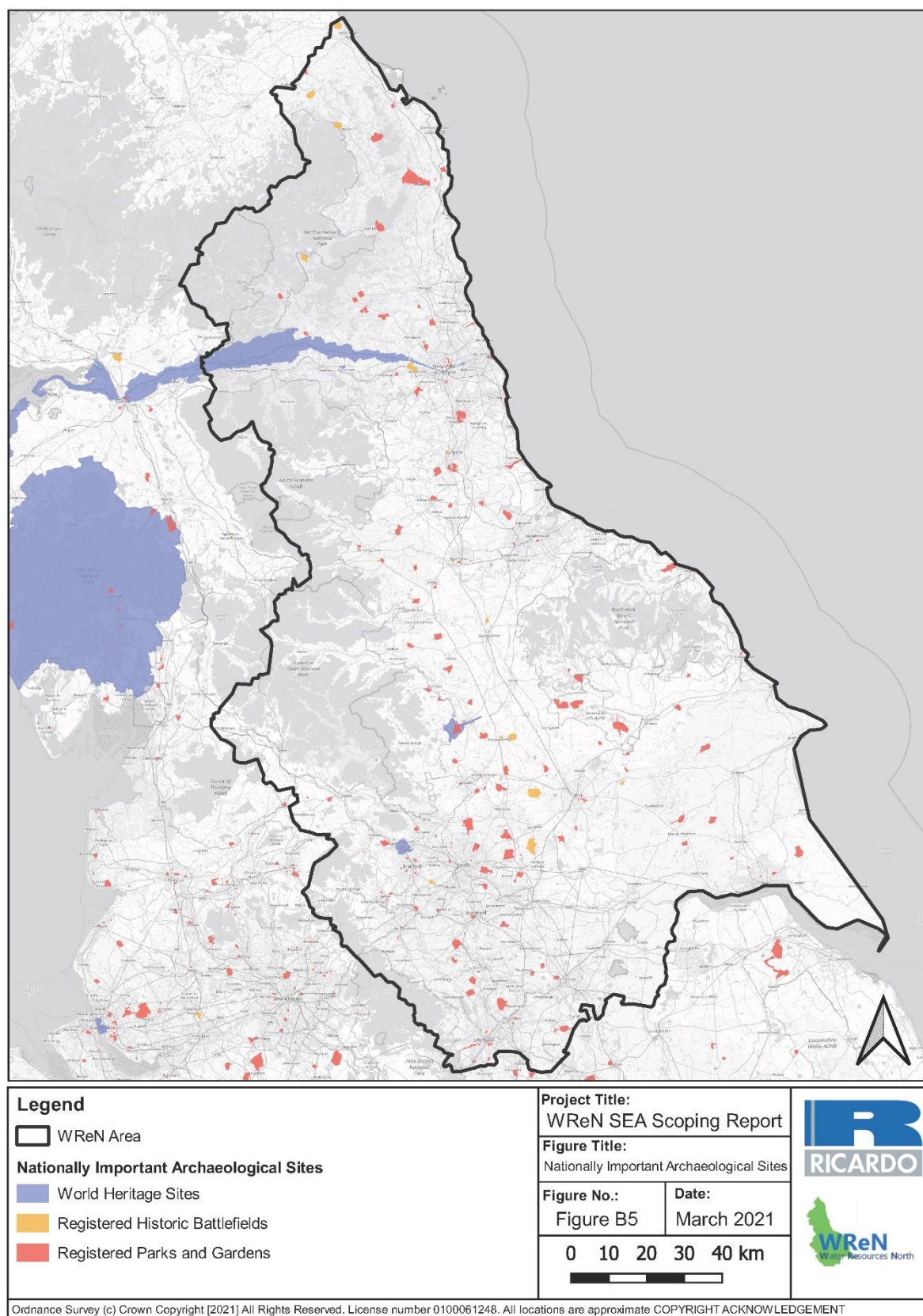
Figure B6 Landscape Designations

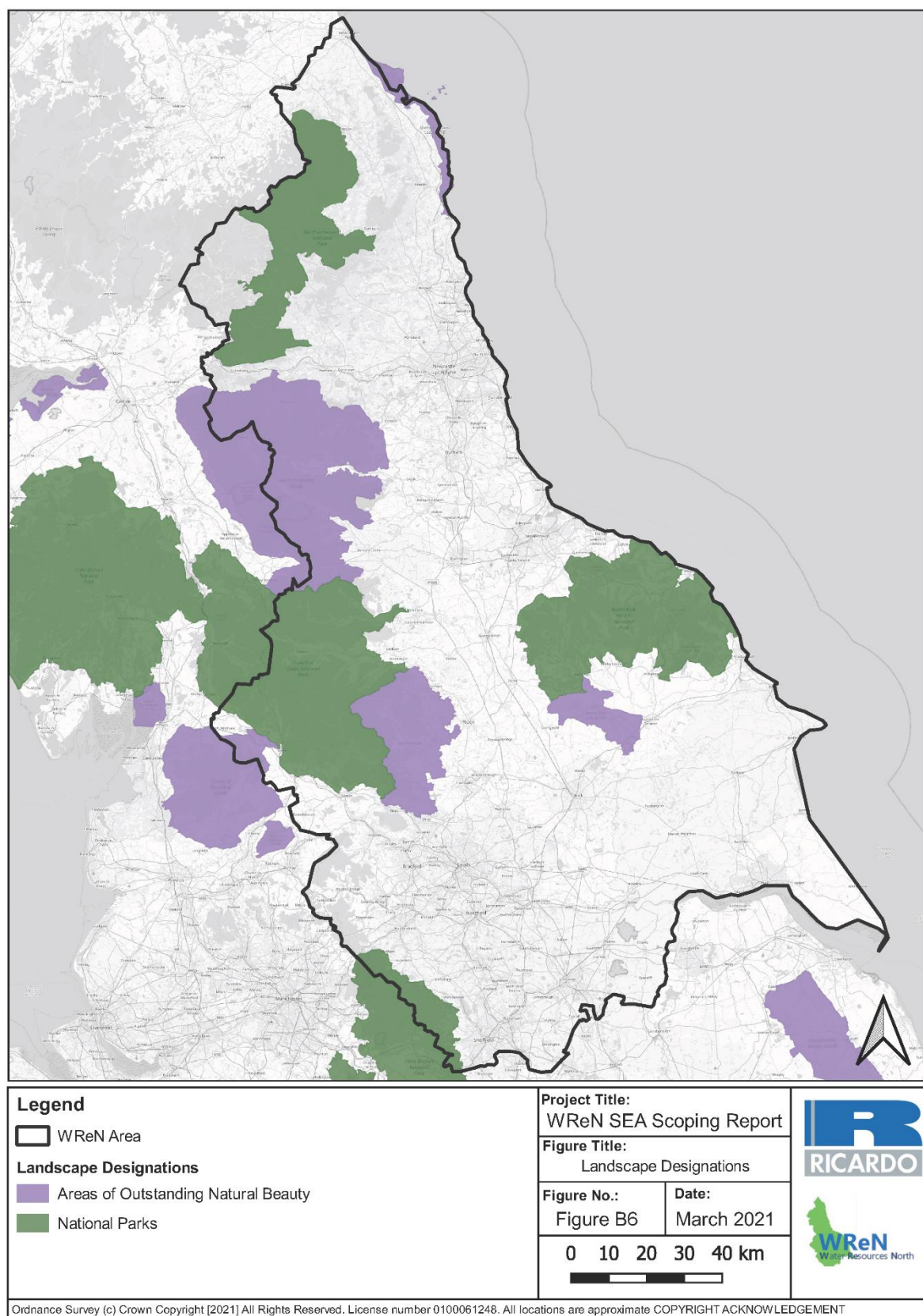












Appendix C: Quality Assurance Checklist

ODPM Guidance¹⁰⁴ on SEA contains a Quality Assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in Table A1, indicating where this Environmental Report meets the requirements.

Table A1 **Quality Assurance Checklist**

Checklist item	Comments
Objectives and context	
The plan's or programme's purpose and objectives are made clear.	The purpose of the Regional Plan is set out in Section 1 of this Scoping Report.
Environmental issues and constraints, including international and EC environmental protection objectives, are considered in developing objectives and targets.	Objectives of other relevant plans and programmes are set out in Section 3 and Appendix A.
SEA objectives, where used, are clearly set out and linked to indicators and targets where appropriate.	SEA objectives are set out in Section 5.3 of this Scoping Report.
Links with other related plans, programmes and policies are identified and explained.	Links are identified in Section 3 and Appendix A of this Scoping Report.
Conflicts that exist between SEA objectives, between SEA and plan objectives and between SEA objectives and other plan objectives are identified and described	Any such compatibility conflicts would be identified as part of the cumulative assessment completed during Stage B1 of the assessment of options and would be presented in the Environment Report.
Scoping	
Consultation Bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report.	This Scoping Report is a part of the consultation process required to meet the requirements of the SEA Regulations and will be circulated to consultees. Further consultation will be undertaken on the Environmental Report and Draft Regional Plan. The consultation process is described in Section 1.2.
The assessment focuses on significant issues.	The scope of the assessment reflects the geographic extent of the WReN region and provides a comprehensive approach to assessment of potentially significant impacts will be considered significant.
Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit.	Difficulties and assumptions are set out in Section 4.1.1 of this Scoping Report.
Reasons are given for eliminating issues from further consideration.	The SEA objectives provide a comprehensive basis for assessment. and at this stage, no issues have been eliminated.

¹⁰⁴ Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive.

Checklist item	Comments
Alternatives	
Realistic alternatives are considered for key issues, and the reasons for choosing them are documented.	The appraisal framework will be used to assess options, programmes and the Regional Plan. This will be set out in the Environmental Report.
Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant.	Assessment of alternatives will be considered in the Environmental Report.
The environmental effects (both adverse and beneficial) of each alternative are identified and compared.	Assessment of alternatives will be considered in the Environmental Report.
Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained.	Assessment of alternatives will be considered in the Environmental Report.
Reasons are given for selection or elimination of alternatives.	Assessment of alternatives will be considered in the Environmental Report.
Baseline information	
Relevant aspects of the current state of the environment and their likely evolution without the plan or programme are described.	The current state of the environment and predicted future baseline is set out in Section 4 and Appendix B of this Scoping Report for each SEA topic.
Environmental characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan.	The environmental characteristics of the area under consideration for the SEA are described in Section 4.
Difficulties such as deficiencies in information or methods are explained.	Difficulties and limitations are set out in Section 4.
Prediction and evaluation of likely significant environmental effects	
Effects identified include the types listed in the Directive (biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage and landscape), as relevant; other likely environmental effects are also covered, as appropriate.	Potential effects will be set out in the Environmental Report.
Both positive and negative effects are considered, and the duration of effects (short, medium or long-term) is addressed.	The nature and duration of potential effects will be set out in the Environmental Report, using an appraisal framework set out in Section 5 of this Scoping Report.
Likely secondary, cumulative and synergistic effects are identified where practicable.	These effects will be identified in the Environmental Report, as described in Section 5.
Inter-relationships between effects are considered where practicable.	These effects will be identified in the Environmental Report, using an appraisal framework based on the one included in Section 5.2 of this Scoping Report.

Checklist item	Comments
The prediction and evaluation of effects makes use of relevant accepted standards, regulations, and thresholds.	Relevant standards will be used where appropriate in undertaking the assessment in the Environmental Report.
Methods used to evaluate the effects are described.	The Environmental Report will include information on the methods used for evaluation of potential effects.
Mitigation measures	
Measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the plan or programme are indicated.	Mitigation measures for potential negative effects will be incorporated into the assessment undertaken in preparing the Environmental Report.
Issues to be taken into account in project consents are identified.	Such mitigating measures, if required, will be highlighted against the Regional Plan options.
The Environmental Report	
Is clear and concise in its layout and presentation.	The Environmental Report will be clear and concise.
Uses simple, clear language and avoids or explains technical terms.	The Environmental Report will use simple, clear language, and explain technical terms, as appropriate.
Uses maps and other illustrations where appropriate.	The Environmental Report will use maps and illustrations where appropriate.
Explains the methodology used.	The SEA methodology will be described in the Environmental Report.
Explains who was consulted and what methods of consultation were used.	The consultation strategy, including organisations and dates of consultation, will be included in the Environmental Report.
Identifies sources of information, including expert judgement and matters of opinion.	Sources of information will be detailed in the Environmental Report.
Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA.	The Environmental Report will include a Non-Technical Summary.
Consultation	
The SEA is consulted on as an integral part of the plan-making process.	<p>This Scoping Report is part of the consultation process required to meet the requirements of the SEA Regulations and will be circulated to consultees. Further consultation will be undertaken on the Environmental Report and Draft Regional Plan.</p> <p>The consultation process is described in Section 1.2.</p>
Consultation Bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate time frames to	This Scoping Report is part of the consultation process required to meet the requirements of the SEA Regulations and will be circulated to consultees. Further consultation will be

Checklist item	Comments
express their opinions on the draft plan and Environmental Report.	undertaken on the Environmental Report and Draft Regional Plan. The consultation process is described in Section 1.2.
Decision-making and information on the decision	
The environmental report and the opinions of those consulted are taken into account in finalising and adopting the plan or programme.	Responses from consultation on the draft Environmental Report will be incorporated in the development of the final Environmental Report. After finalisation of the Regional Plan, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the Regional Plan.
An explanation is given of how they have been taken into account.	Consultation responses, and how they have been incorporated in the final Environmental Report will be incorporated in the report. After finalisation of the Regional Plan, a statement will be published describing how the SEA and the responses to consultation have been taken into account during the preparation of the Regional Plan.
Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered.	This will be set out following consultation on the draft Regional Plan and Environmental Report. .
Monitoring measures	
Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA.	The Environmental Report will include a section addressing proposals for monitoring.
Monitoring is used, where appropriate, during implementation of the plan or programme to make good deficiencies in baseline information in the SEA.	The suggestions for monitoring will be made in the Environmental Report, with monitoring taking place following implementation of the Regional Plan, further to consultation with regulatory authorities including the Environment Agency, Natural England, Historic England
Monitoring enables unforeseen adverse effects to be identified at an early stage. (These effects may include predictions which prove to be incorrect.)	The suggestions for monitoring will be made in the Environmental Report, with monitoring taking place following implementation of the Regional Plan, further to consultation with regulatory authorities including the Environment Agency, Natural England, Historic England
Proposals are made for action in response to significant adverse effects.	Mitigation measures for adverse effects will be addressed in the Environmental Report.



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