MOTT MACDONALD

Northumbrian Water - Water Resources Management Plan 2024

Environmental Report - Appendices

October 2024

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Environmental Report - Appendices

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Issue and Revision Record

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A	20/09/22	S S	C S	Ja F	First draft for client comment
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Contents

A. SEA Process Tasks

Table A.1: SEA Process Tasks

SEA Stage	SEA Task	Task Purpose
Stage A Setting the context and objectives, establishing the baseline and deciding on the scope	A1: Identifying other relevant plans, programmes, and environmental protection objectives	To establish how the plan or programme is affected by outside factors, to suggest ideas for how any constraints can be addressed, and to help to identify SEA objectives
	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
	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
	A4: Developing SEA objectives	To provide a means by which the environmental performance of the plan or programme and alternatives can be assessed
	A5: Consulting on the scope of SEA	To ensure that the SEA covers the likely significant environmental effects of the plan or programme. This is a statutory five-week consultation period, as a minimum)
Stage B Developing and refining alternatives and assessing effects	B1: Testing the plan or programme objectives against the 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
	B2: Developing strategic alternatives	To develop and refine strategic alternatives
	B3: Predicting the effects of the draft plan or programme, including alternatives	To predict the significant environmental effects of the plan or programme and alternatives
	B4: Evaluating the effects of the draft 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
	B5: Considering ways of mitigating adverse effects	To ensure that adverse effects are identified and potential mitigation measures are considered
	B6: Proposing measures to monitor the environmental effects of plan or programme implementation	To details the means by which the environmental performance for the plan or programme can be assessed
Stage C Preparing the Environmental Report	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	D1: Consulting on the draft plan or programme and Environmental Report	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. There is no set time period for consultation. The SEA Directive states that the Consultation Bodies and the public '*shall be given an early and effective opportunity within appropriate time frames to express their opinion on the draft plan or programme and the accompanying environmental report before the adoption of the plan or programme or its submission to the legislative procedure'*. The Environmental Report will be consulted upon alongside the draft WRMP To gather more information through the opinions and concerns of the public

SEA Stage	SEA Task	Task Purpose
	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
	D3: Decision making 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 implementation of the plans or programme	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
	E2: Responding to adverse effects	To prepare for appropriate responses where adverse effects are identified

B. Scoping Report Consultation Log

Table B.2: Scoping Report Consultation Log

Comment number	*Owner*	*Relevant topic*	*Comment*	*MM response*
Comments from Environment Agency – 20.07.22				
1	Environment Agency (EA)	Baseline information	Well described and documented need for SEA, based on legislation and current guidance. Section 1.5 describes the steps that were taken to determine the need for a SEA and section 1.9 describes the relationship of the WRMP to the Water Resources North Regional Plan.	Noted, however no change to proposed approach is proposed.
2	EA		The baseline identifies the broad number/amount of the baseline features, but gives little assessment of current condition of these features. Most detail is given for the WFD condition of the various water bodies, but for things like protected sites or SSSI's there is no condition assessment or assessment. It would be useful to identify in more detail how the base line will be set and the information then used to assess the options. Currently it appears that the SEA will only look at high level data. There is a GIS system to be used, it would be useful in section 3 if there was more explanation on how the baseline will be used to measure/gauge the effects of the options. Note: 3.14.4 - % missing for freshwater natural capital stocks.	Existing current baseline condition is difficult to gauge given the scale of the area being investigated. For options included in the preferred plan, further HRA Appropriate Assessments and WFD Stage 2 assessments will set a more detailed baseline. Once projects are selected and progress to EIA stage, site surveys and detailed impact assessments will be undertaken. SEA methodology is to be included in the Environmental Report in Section 3. Freshwater natural capital stock value is not available at time of writing
3	EA		All SEA topics are scoped into the assessment and have implications and opportunities identified for each topic. One potential topic to consider adding is in the material assets section where consideration could be given to the end of life use for assets and how they may be decommissioned (circular economy type planning). It would be useful to have a view on how this could be taken into account when looking at options development and selection.	Noted. Acknowledgement of Circular economy can be added to existing sub-themes in the material assets objective
4	EA		A comprehensive list of policy, plans and programmes. Include reference to the Flood Risk Management Plans (FRMPs). 3.2.2 mentions the NERC 2006 Act - the Environment Act 2021 extends the general duty under section 40 of the NERC Act to 'conserve and enhance' and adds reference to local nature recovery strategies, species strategies and protected sites strategies. This section needs to be updated in light of the amendments made by the Environment Act 2021.	Local nature recovery strategies and nutrient neutrality are referenced under Nature for People Climate and Wildlife policy paper (2021) – includes the England Peat Action Plan in the plans programmes and

Comment number	Owner	Relevant topic	Comment	MM response
Comments from Environment Agency – 20.07.22				
			Consider if Nutrient Neutrality should be considered either on its own or in combination with other plans and policies. Whilst nutrient neutrality mainly references new development there may be additional impacts with regard to this plan that should be taken into account.	policies review and reference to be made to Environment Act 2021.
5	EA		The Report sets out the stages of SEA development and the types of assessments to be undertaken at each stage and how these will be used to demonstrate the potential effects (positive and negative) and the scale of the effects on the SEA objectives and the features/outcomes of the plan. It is not clear how this will guide the development of the options. It would be useful to explain how in developing options the likely environmental effects are taken into account, is it possible to say how the options development and assessment of reasonable alternatives will be drawing on the information in the SEA and from the various assessments? This would help in giving evidence to inform 7.2.3 and would demonstrate that options where developed taking a wide range of objectives into account.	No physical options for the NW WRMP have been proposed as there is not considered to be a deficit of water in the Northumbrian Region. Therefore, best value planning has not been required. Only demand management options are proposed and these have no physical footprint.
6	EA		The report sets out the stages of SEA and how they will be implemented through the process. Section 5 sets out the SEA framework giving an overarching set of SEA objectives and assessment questions to guide the assessment and align the SEA with the objectives for the WReN regional plans. Aligning the objectives of the plans seems a good approach allowing for the efficient use of information and effective comparisons between the plans. The report sets out the question to be answered for each option with regard to the objectives. With regard to the questions in table 5.2 we suggest these are revisited to ensure they pick out the opportunities for improving the current baseline. A few questions mention if the proposal will 'affect' the feature/item of interest, I am assuming this will include positive as well as negative effects, could this be made clearer in the description of how the questions will be framed. The report mentions alternatives, but there is little information on how these will be identified and assessed. More information on the approach to identifying and assessing reasonable alternatives would be useful to understand how this will be addressed.	Text describing methodology to be included in Section 3 of the Environmental Report and throughout the appendices. It includes consideration of both positive and negative effects investigated. No alternatives or best value plans have been considered as there is not considered to be a deficit for the NW Region. Therefore no physical options have been taken forward, only demand management options which have no physical footprint.

C. Policies, Plans and Programmes Review

Table C.3: Policies, Plans and Programmes Review

Policy, Plan or Programme	Topic	Key objectives, guidance and references
International		
Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979)	Biodiversity	The aims are to conserve wild flora and fauna and their natural habitats and to promote European cooperation. Particular importance is placed on the need to protect endangered natural habitats and endangered vulnerable species, including migratory species.
Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)	Biodiversity	The Convention aims to conserve terrestrial, aquatic and avian migratory species throughout their range.
Convention on Biological Diversity (1992)	Biodiversity	The Biodiversity Convention has three main aims which are to conserve biological diversity; to ensure the sustainable use of the components of biological diversity; and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.
Ramsar Convention - The Convention on Wetlands of International Importance (1971)	Biodiversity	Provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. The aim is 'the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world'. The Convention uses a broad definition of the types of wetlands covered, including lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves and coral reefs, and human-made sites such as fishponds, rice paddies, reservoirs, and salt pans.
UN Framework Convention on Climate Change (1992)	Climatic Factors	The stated objective is to achieve stabilisation of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities.
Kyoto Protocol to the UN Framework Convention on Climate Change (1997)	Climatic Factors	The Kyoto Protocol was adopted in 1997 and ratified in 2005. It commits its parties to limit climate change by setting internationally binding targets for emission reductions. Covering the six main GHGs, it required the UK to reduce emissions by 12.5% in the first commitment period (2008-2012). This was successfully achieved, and a second commitment period has been agreed whereby European Union (EU) countries will aim to achieve a joint 20% reduction compared to 1990 levels.
Commitments arising from the World Summit on Sustainable Development, Johannesburg (2002)	Climatic Factors	Adopted at the World Summit on Sustainable Development in 2002 and built upon earlier declarations made at previous conferences and summits. It commits nations to take a collective responsibility to build a human, equitable and caring global society cognisant of the need for human dignity for all. The Declaration also reinforces the three pillars of sustainable development: environmental, economic and social development at the local, national, regional and global level.
Paris Agreement (2015)	Climatic Factors	The Paris Agreement came out of the COP21 and aims to limit global temperature rises to 1.5ºC to 2ºC above pre-industrial levels. It brings together 196 parties from across the world into a common cause and requires all parties to put forward nationally determined

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		contributions to strengthen efforts in the years ahead. It also aims to strengthen the ability of countries to deal with the impacts of climate change.
Charter for the Protection and Management of Archaeological Heritage (1990)	Historic Environment	The charter lays down principles relating to the different aspects of archaeological heritage management. These include the responsibilities of public authorities and legislators, principles relating to the professional performance of the processes of inventorisation, survey, excavation, documentation, research, maintenance, conservation, preservation, reconstruction, information, presentation, public access and use of the heritage, and the qualification of professionals involved in the protection of the archaeological heritage. The Charter states that policies for the protection of archaeological heritage should constitute an integral component of policies relating to land use, development, and planning as well as of cultural, environmental and educational policies.
The World Heritage Convention (1972)	Historic Environment	The Convention defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List. It also sets out the duties of states in identifying potential sites and their role in preserving them.
Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)	Population and Human Health	The Aarhus Convention was created to give empowerment to citizens and civil society organisations in relation to environmental matters and is founded on the principles of participative democracy. It provides for access to environmental information; public participation in environmental decision making; and access to justice.
European[1]		
Ambient Air Quality Directive (2008/50/EC)	Air	It establishes ambitious, cost-effective targets for improving human health and environmental quality up to 2020. The EU objective on air quality is 'to achieve levels of air quality that do not result in unacceptable impacts on, and risks to, human health and the environment'.
Thematic Strategy on Air Pollution (2005)	Air	The Strategy recognises the impact of air pollution on human health and the environment. It establishes interim objectives for air pollution in the EU and proposes appropriate measures for achieving them.
Establishing measures for the recovery of the stock of European eel 2007 (1100/2007)	Biodiversity	Advice from the International Council for the Exploration of the Sea (ICES) in 2006 indicated that the stock of the European eel (*Anguilla anguilla*) is outside safe biological limits across European waters. The population has declined significantly, reducing to 5% of the original 1980s stock levels. In response to this advice, the European Union adopted Council Regulation (EC) No 1100/2007, which requires Member States to undertake a series of measures aimed at the recovery of eel stock. The goal is to achieve 40% escapement of adult eels, relative to that in absence of anthropogenic factors, to sea to spawn. The EU Regulation was transposed into UK law under The Eels (England and Wales) Regulations 2009. Eleven Eel Management Plans have been prepared, one for each River Basin identified in England and Wales. The plans outline the current situation and how we intend to achieve the targets required by the European Regulation. Such measures include a reduction in

[1] It is acknowledged that the UK has left the European Union. However, 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. As such, they are considered to remain a useful contextual frame as part of the policies, plans and programmes review.

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		fishing pressure, improving access and habitat quality, and reducing the impacts of entrainment. The measures that will require the installation of passes at obstructions and screens at abstraction and discharge points that prevent the migration of eels.
Our life insurance, our natural capital: an EU biodiversity strategy to 2020 (2011)	Biodiversity	Strategy to halt the loss of biodiversity and ecosystem services in the EU by 2020. There are six main targets and 20 actions to help Europe reach its goal. The six targets cover: Full implementation of EU nature legislation to protect biodiversity Better protection for ecosystems, and more use of green infrastructure More sustainable agriculture and forestry Better management of fish stocks Tighter controls on invasive alien species A bigger EU contribution to averting global biodiversity loss The strategy is in line with two commitments made by EU leaders in March 2010. The first is the 2020 headline target: 'Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss'; the second is the 2050 vision: 'By 2050, European Union biodiversity and the ecosystem services it provides – its natural capital – are protected, valued and appropriately restored for biodiversity's intrinsic value and for their essential contribution to human wellbeing and economic prosperity, and so that catastrophic changes caused by the loss of biodiversity are avoided'.
Fresh Water Fish Directive (2006/44/EC)	Biodiversity	The Directive concerns the quality of fresh waters and shall apply to those waters designated by the Member States as needing protection or improvement in order to support fish life. This directive shall not apply to waters in natural or artificial fishponds used for intensive fish-farming.
Directive on the Conservation of Wild Birds (79/409/EEC) (as amended)	Biodiversity	Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds (this is the codified version of Directive 79/409/EEC as amended). This Directive ensures far-reaching protection for all of Europe's wild birds, identifying 194 species and sub-species among them as particularly threatened and in need of special conservation measures. There are a number of components to this scheme: Member States are required to designate SPAs for 194 particularly threatened species and all migratory bird species. SPAs are scientifically identified areas critical for the survival of the targeted species, such as wetlands. They are part of the Natura 2000 ecological network set up under the Habitats Directive 92/43/EEC. A second component bans activities that directly threaten birds, such as the deliberate killing or capture of birds, the destruction of their nests and taking of their eggs, and associated activities such as trading in live or dead birds (with a few exceptions). A third component establishes rules that limit the number of bird species that can be hunted (82 species and subspecies) and the periods during which they can be hunted. It also defines hunting methods which are permitted (e.g., non-selective hunting is banned).
Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC)	Biodiversity	The main aim of the Habitats Directive is to promote the maintenance of biodiversity, taking account of economic, social, cultural and regional requirements. While the Directive makes a contribution to the general objective of sustainable development; it ensures the conservation of a wide range of rare, threatened or endemic species, including around 450 animals and 500 plants. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right. The Directive provides for a ban on the downgrading of breeding and resting places for certain strictly protected animal species. Exceptions to the strict protection rules can be granted under very specific conditions. The Habitats Directive also establishes the EU wide Natura 2000 ecological network of protected areas. For

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		these areas it provides a high level of safeguards against potentially damaging developments. Together with the Birds Directive, the Habitats Directive forms the backbone of EU nature protection legislation.
Directive on Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (2006/88/EC)	Biodiversity	The Directive sets out rules on animal health concerning aquaculture animals and related products which apply to the marketing, importation and transit of such products. It also establishes measures aimed at the prevention and control of diseases in aquaculture animals as well as making further provisions regarding the authorisation to aquaculture production businesses and processing establishments.
Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond (2007)	Climatic Factors	This a set of binding legislation to ensure the EU meets its climate and energy targets for the year 2020. The targets are: 20% reduction in GHGs 20% of EU energy from renewables 20% improvement in energy efficiency
A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy (2018)	Climatic Factors	The long-term strategy sets out Europe's commitment to lead in global climate action and to present a vision that can lead to achieving net-zero greenhouse gas emissions by 2050 through a socially-fair transition in a cost-efficient manner. It looks into the portfolio of options available for Member States, business and citizens, as well as into how these can contribute to the modernisation of our economy and improve the quality of life of Europeans, protect the environment, and provide for jobs and growth.
Promotion of the use of energy and renewable sources Directive (2009/28/EC)	Climatic Factors	The Directive sets ambitious targets that the EU will reach a 20% share of energy from renewable sources by 2020 and a 10% share of renewable energy specifically in the transport sector. It also sets out to improve the legal framework for promoting renewable energy.
Energy Act 2013	Climatic Factors	The Act makes provides a framework for delivering secure, affordable and low carbon energy. It includes provisions for decarbonisation and the duties in relation to it.
Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development	Cross-cutting	The Renewed EU Sustainable Development Strategy (2006) deals in an integrated way with economic, environmental and social issues and lists the following seven key challenges: 1. Climate change and clean energy; 2. Sustainable transport; 3. Sustainable consumption and production; 4. Conservation and management of natural resources; 5. Public health; 6. Social inclusion, demography and migration; and 7. Global poverty

Policy, Plan or Programme	Topic	Key objectives, guidance and references
European Commission Environmental Liability Directive (2004/35/EC)	Cross-cutting	The Directives relates to the prevention and remedying of environmental damage (ELD) and establishes a framework based on the polluter pays principle to prevent and remedy environmental damage. The Directive defines "environmental damage" as damage to protected species and natural habitats, damage to water and damage to soil.
Directive on the assessment of the effects of certain plans and programmes on the environment (2001/42/EC)	Cross-cutting	The Directive, known as the SEA Directive, sets out the requirement for the assessment of certain plans and programmes on the environment. An SEA is mandatory for plans/programmes which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town & country planning or land use and which set the framework for future development consent of projects listed in the EIA Directive. SEA is also required where plans/programmes have been determined to require an assessment under the Habitats Directive.
The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1985)	Historic Environment	The Convention sets out to reinforce and promote policies for the conservation and enhancement of Europe's heritage. It also affirms the need for European solidarity with regard to heritage conservation and is designed to foster practical co-operation among the Parties. It establishes the principles of "European co-ordination of conservation policies" including consultations regarding the thrust of the policies to be implemented.
The European Convention on the Protection of Archaeological Heritage (Valletta Convention) (1992)	Historic Environment	The Convention aims to protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study.
The European Landscape Convention (2006)	Landscape	The Convention is also known as the Florence Convention and it aims to promotes the protection, management and planning of European landscapes and organises European co-operation on landscape issues.
The Environmental Noise Directive (2002/49/EC)	Population and Human Health	The Directive is the EU's main instrument to identify noise pollution levels and covers the following three key action areas: the determination of exposure to environmental noise; ensuring that information on environmental noise and its effects is made available to the public; and preventing and reducing environmental noise where necessary and preserving environmental noise quality where it is good. It applies to noise to which humans are exposed, particularly in built-up areas, in public parks or other quiet areas in an agglomeration, in quiet areas in open country, near schools, hospitals and other noise-sensitive buildings and areas. It does not apply to noise that is caused by the exposed person himself, noise from domestic activities, noise created by neighbours, noise at workplaces or noise inside means of transport or due to military activities in military areas.
European Soils Charter (2003)	Soil	The Charter sets out to protect soil as a complex natural resource which is fundamental to life. It recognises that: Soil is a precious asset Soil is a limited resource which is easily destroyed Land has a wide variety of uses and a proper planning policy is needed by Governments for urban development and civil engineering projects Farmers and foresters must preserve the soils quality

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		Soil must be protected from erosion and pollution Further research and collaboration is required to ensure the wise use and conservation of soil
Thematic Strategy for Soil Protection (2006)	Soil	The Strategy aims to protect soil and promote its sustainable use. It is based on the following guiding principles: Preventing further soil degradation and preserving its functions Restoring degraded soils to a level of functionality consistent at least with current and intended use, thus also considering the cost implications of the restoration of soil
The Nitrates Directive (91/676/EEC)	Water	The Nitrates Directive aims to protect water quality across Europe by preventing nitrates from agricultural sources polluting ground and surface waters and by promoting the use of good farming practices. This Directive forms integral part of the Water Framework Directive and is one of the key instruments in the protection of waters against agricultural pressures.
The Water Framework Directive (WFD) (2000/60/EC)	Water	The WFD has the following key aims: Expanding the scope of water protection to all waters, surface waters and groundwater Achieving 'good status' for all waters by a set deadline Water management based on river basins 'Combined approach' of emission limit values and quality standards Getting the prices right Getting the citizen involved more closely Streamlining legislation There are a number of objectives in respect of which the quality of water is protected. The key ones at European level are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water. Member States must aim to reach good chemical and ecological status in inland and coastal waters by 2015.
Urban Wastewater Treatment Directive (91/271/EEC)	Water	The objective of this Directive is to protect the environment from the adverse effects of urban wastewater discharges and discharges from certain industrial sectors. The Directive concerns the collection, treatment and discharge of such wastewater.
Drinking Water Directive (1998/83/EC)	Water	The Drinking Water Directive sets out the following objectives: Sets quality standards for drinking water quality at the tap (microbiological, chemical and organoleptic parameters) and the general obligation that drinking water must be wholesome and clean. Obliges Member States to regular monitoring of drinking water quality and to provide to consumers adequate and up-to-date information on their drinking water quality. Member States may exempt water supplies serving less than 50 persons or providing less than 10 m3 of drinking water per day as an average and water in food-processing undertakings where the quality of water cannot affect the wholesomeness of the foodstuff in its finished form.
Directive on Bathing Water (76/160/EEC); and Directive 2006/7/EC	Water	The overall objective of the Directive remains the protection of public health whilst bathing, but the revised Directive also offers an opportunity to improve management practices at bathing waters and to standardise the information provided to bathers across Europe and aims to set more stringent water quality standards and also puts a stronger emphasis on beach management and public information.

Policy, Plan or Programme	Topic	Key objectives, guidance and references
repealing Directive 76/160/EEC (from 2014)		
Groundwater Directive (2006/118/EC)	Water	This directive establishes a regime which sets underground water quality standards and introduces measures to prevent or limit inputs of pollutants into groundwater. The directive establishes quality criteria that takes account local characteristics and allows for further improvements to be made based on monitoring data and new scientific knowledge. The directive thus represents a proportionate and scientifically sound response to the requirements of the WFD as it relates to assessments on chemical status of groundwater and the identification and reversal of significant and sustained upward trends in pollutant concentrations. Member States will have to establish the standards at the most appropriate level and take into account local or regional conditions. The groundwater directive complements the WFD. It requires: Groundwater quality standards to be established by the end of 2008 Pollution trend studies to be carried out by using existing data and data which is mandatory by the WFD (referred to as 'baseline level' data obtained in 2007-2008) Pollution trends to be reversed so that environmental objectives are achieved by 2015 by using the measures set out in the WFD Measures to prevent or limit inputs of pollutants into groundwater to be operational so that WFD environmental objectives can be achieved by 2015 Reviews of technical provisions of the directive to be carried out in 2013 and every six years thereafter Compliance with good chemical status criteria (based on EU standards of nitrates and pesticides and on threshold values established by Member States)
Marine Strategy Framework Directive (2008/56/EEC)	Water	The aim of the Marine Strategy Framework Directive is to protect more effectively the marine environment across Europe. It aims to achieve Good Environmental Status of the EU's marine waters by 2020 and to protect the resource base upon which marine-related economic and social activities depend. The Directive enshrines in a legislative framework the ecosystem approach to the management of human activities having an impact on the marine environment, integrating the concepts of environmental protection and sustainable use.
Directive on the Assessment and Management of Flood Risks (2007/60/EC)	Water	Its aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive requires Member States to first carry out a preliminary assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. For such zones they would then need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by 2015. The Directive applies to inland waters as well as all coastal waters across the whole territory of the EU.
Blueprint to Safeguard Europe's Water Resources (2012)	Water	The Blueprint outlines actions in relation to improved implementation of current water legislation and the integration of water policy objectives into other policies, and also aims to fill the gaps in regard to water quantity and efficiency. The objective is to ensure that a sufficient quantity of good quality water is available for people's needs, the economy and the environment throughout the EU. It is closely linked to EU's 2020 Strategy and the 2011 Resource Efficiency Roadmap; however, the analysis spans up to 2050 and is therefore expected to drive EU water policy over the long term.
National		
The Eels (England & Wales) Regulations 2009 (as amended)	Biodiversity	Transposed from the European Directive (1100/2007) into UK law, the Regulations aim to establish measures for the recovery of the stock of European eel. The Regulations will help implement delivery Eel Management Plans.

Policy, Plan or Programme	Topic	Key objectives, guidance and references
Salmon and Freshwater Fisheries Act 1975	Biodiversity	The Act sets out the legal framework in which salmon and freshwater fisheries are regulated. It covers regulation on fishing methods and related offences, obstructions to fish passage, salmon and freshwater fisheries administration and law enforcement.
UK Post-2010 Biodiversity Framework, JNCC and Defra (2012)	Biodiversity	The purpose of the Framework is to set a broad enabling structure for action across the UK between now and 2020: To set out a shared vision and priorities for UK-scale activities, in a framework jointly owned by the four countries, and to which their own strategies will contribute. To identify priority work at a UK level which will be needed to help deliver the Aichi targets and the EU Biodiversity Strategy. To facilitate the aggregation and collation of information on activity and outcomes across all countries of the UK, where the four countries agree this will bring benefits compared to individual country work. To streamline governance arrangements for UK-scale activity.
Making Space for Nature - A review of England's Wildlife Sites and Ecological Network (2010)	Biodiversity	The report aims to answer the following questions: Do England's wildlife sites comprise a coherent and resilient ecological network? If not, what needs to be done? The report concludes that the approaches required to achieve a coherent and resilient ecological network are varied, and 24 wide-ranging recommendations are presented. Five themes unite them: We need to continue the recent progress in improving the management and condition of wildlife sites, particularly our SSSIs. We also make recommendations for how these should be designated and managed in ways that enhance their resilience to climate change. We need to properly plan ecological networks, including restoration areas. Restoration needs to take place throughout England. However, in some areas, both the scale of what can be delivered to enhance the network, and the ensuing There are a large number of surviving patches of important wildlife habitat scattered across England outside of SSSIs, for example in Local Wildlife Sites. We need to take steps to improve the protection and management of these remaining wildlife habitats. 'Protection' will usually be best achieved through incentive-based mechanisms, but at times may require designation. We need to become better at deriving multiple benefits from the ways we use and interact with our environment. There are many things that society has to do that may seem to have rather little to do with nature conservation, but could have, or even should have if we embrace more radical thinking; flood management by creating wetlands is an obvious example. We need to exploit these 'win-win' opportunities to the full. Being better at valuing a wider range of ecosystem services would help this process. We will not achieve a step-change in nature conservation in England without society accepting it to be necessary, desirable, and achievable. This will require strong leadership from government and significant improvements in collaboration between local authorities, local communities, statutory agencies, the voluntary and private sectors, farmers, landowners and other land-managers and individual citizens.
Biodiversity 2020: A strategy for England's wildlife and ecosystem services, Defra (2011)	Biodiversity	The Strategy builds on the Natural Environment White Paper and sets out how the UK is implementing the international and EU commitments. The mission for this strategy is as follows: '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'.
The Conservation of Habitats and Species Regulations (2010) (as amended)	Biodiversity	The Conservation of Habitats and Species Regulations 2010 apply in the terrestrial environment and in territorial waters out to 12 nautical miles. The EU Habitats and Wild Birds Directives are transposed in UK offshore waters by separate regulations. The new regulations do not make any substantive changes to existing policies and procedures other than the establishment of the Marine Management Organisation. The Marine Management Organisation takes on certain licensing functions from Natural England to ensure consistency with the approach in the Marine and Coastal Access Act 2009. The objective of the Habitats Directive is to protect

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species.
The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019)	Biodiversity	This instrument provides changes to those parts of the 2017 conservation of habitats and species regulations which would no longer work when the UK leaves the EU.
Delivering a healthy natural environment. Ecosystem approach action plan, Defra (2010)	Biodiversity	Known as the "Ecosystems Approach Action Plan" (EAAP)), it was first published in 2007 and was then updated in 2010. It sets out the concept and framework of ecosystem services and describes how this could be translated into "an ecosystems approach" to policy and decision making that could be applied at all levels of Government.
The Invasive Alien Species (Enforcement and Permitting) Order 2019	Biodiversity	The Order brings into force the EU Invasive Alien Species Regulation (1143/2014) on the prevention and management of invasive alien plant and animal species in England and Wales, including the relevant licenses, permits and rules for keeping invasive alien species.
The Great Britain Invasive Non-Native Species Strategy, Defra (2015)	Biodiversity	The Strategy builds on the first which was published in 2008 and sets out a series of aims and objectives to underpin action until 2020. It aims to address the issues of INNS in the UK to protect biodiversity, quality of life and economic interests.
A narrative for conserving freshwater and wetland habitats in England, Natural England (2016)	Biodiversity	Provides a narrative as to why the natural ecosystem system function is important for freshwater and wetland wildlife and recognises the ecosystem service benefits. It aims to provide a strategic framework for decision making for conserving these important habitats.
Conservation 21 - Natural England's Conservation Strategy for the 21st Century, Natural England (2016)	Biodiversity	The Strategy sets out how Natural England aim to contribute to the ambition set out the in Defra's strategy to 2020 and how they can work together with others to deliver this shared ambition. The Strategy is based on the following three principles: Creating resilient landscapes and seas Putting people at the heart of the environment Growing natural capital
State of Natural Capital Annual Report 2020, Natural Capital Committee (2020)	Biodiversity	The Nature Capital Committee's seventh annual report on the state of natural capital. The report recognises the importance that nature-based interventions will have on achieving net zero by 2050 targets. The report makes recommendations for the Government to take forward and outlines key points for inclusion within the Environment Bill.

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Standing Advice on Protected Species, Natural England (2016)	Biodiversity	Provides guidance on reviewing planning applications which might have an affected on protected species.
Nature for People Climate and Wildlife policy paper (2021) – includes the England Peat Action Plan	Biodiversity, Water	Outlines the link between our health and economic prosperity, as realised by the Covid-19 pandemic. The policy emphasises the scale of the biodiversity crisis, implementing a legally binding target in the Environment Bill for species abundance for 2030, with the intention of this being the Net Zero equivalent for nature. This included the publishing of a Green Paper in 2021 which described how this would be delivered, along with the domestic ambition of protecting 30% of UK land by 2030, since leaving the EU. They launched Action Plans that are supported by the £640 million Nature for Climate Fund to expand and enhance woodland cover, and restore and maintain peatland. The aim is for these to work together to play key role in Nature Recovery Network. This Network includes Nature Recovery Strategies, which incorporate the schemes of the Sustainable Farming Incentive, Local Nature Recovery and Landscape Recovery, to ensure fair payment of farmers for sustainable action, and supporting nature restoration and biodiversity recovery. England Peat Action Plan States the importance of peatland restoration as they are the biggest terrestrial carbon store, home to many rare species, and restored upland peatland helps manage flood risk by releasing water over a longer period of time. They are attempting to eradicate damaging practices such as bringing forward legislation and seeing the phasing out of managed burning, which will protect 142, 000ha of upland peatland. Aims to restore, sustainably manage and protect our peatlands. There is a proposed investment of over £50 million from the Nature for Climate Fund, to see a restoration of approximately 35, 000 ha of peatland by 2025, in line with the Nature for Climate Peatland Grant Scheme. Intend to have more recommendations by summer 2022, including new schemes with incentives for farmers and land managers to be more sustainable.
Climate Change Act 2008	Climatic Factors	The Act sets out a legal framework to commit the Government to tackling climate change and climate change adaptation is also covered in the Act as it provides a legal framework for adaptation policy. The Act sets out a target of net zero by 2050 based on 1990 levels.
UK Climate Change Risk Assessment, Defra (2017)	Climatic Factors	Identifies the key climate change risks and opportunities for the UK which are as follows: Flooding and coastal change risks to communities, businesses and infrastructure Risks to health, well-being and productivity from high temperatures 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 Risks to domestic and international food production and trade New and emerging pests and diseases and invasive non-native species affecting people, plants and animals
The National Adaptation Programme and the	Climatic Factors	This is the second National Adaptation Programme (NAP) and sets out the Government's response to the second Climate Change Risk Assessment (CCRA). It also outlines the actions that will be taken to address the climate change issues identified in the CCRA across

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Third Strategy for Climate Adaptation Reporting, Defra (2018)		the following key sectors: Natural environment; Infrastructure; People and the built environment; Business and industry; and Local government.
National Planning Policy Framework (2023)	Cross-cutting	The National Planning Policy Framework sets out government's planning policies for England and how these are expected to be applied. It provides a framework within which locally prepared plans can provide for development in a sustainable manner. Planning law requires that applications for planning permission be determined in accordance with the development plan unless material considerations indicate otherwise. The National Planning Policy Framework must be taken into account in preparing the development plan and is a material consideration in planning decisions. Planning policies and decisions must also reflect relevant international obligations and statutory requirements. The Framework does not contain specific policies for nationally significant infrastructure projects. These are determined in accordance with the decision-making framework in the Planning Act 2008 (as amended) and relevant national policy statements for major infrastructure, as well as any other matters that are relevant (which may include the National Planning Policy Framework). National policy statements form part of the overall framework of national planning policy and may be a material consideration in preparing plans and making decisions on planning applications.
Environment Act 2021	Cross-cutting	The Environment Act provides legislation that will protect and enhance the UK's environment, focusing on four priority areas: Air quality Water Biodiversity Resource efficiency and waste reduction The Act will help to clean up the UK's air, restore natural habitats, increase biodiversity, reduce waste, and make better use of the country's resources. It legislated to halt the decline in species by 2030, requiring new developments to improve or create habitats for nature through achieving a minimum 10% improvement in biodiversity, helping to reverse declines of iconic British species like hedgehog, red squirrel, and water vole. It will help the country's transition to a more circular economy, through for example, encouraging and promoting recycling. The Act puts in place legally binding environmental targets, enforced by the independent Office for Environmental Protection (OEP). These targets, if implemented and monitored properly, will hold the government and public bodies to account on their environmental obligations. The Act also aims to crack down on water companies that discharge sewage into rivers, waterways, and coastlines, legislating to ensure that water companies secure a progressive reduction in the adverse impacts of discharges from storm overflows, and requiring the government to publish a plan to reduce sewage discharges from storm overflows by September 2022 and report to Parliament on the progress towards implementing the plan. In specific relation to water, the Act sets out legislation in six key areas: Plans and proposals Storm overflows Regulation of water and sewerage undertakers Abstraction Water quality Land drainage

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		In specific relation to nature and biodiversity, the Act sets out legislation in seven key areas: Biodiversity gain in planning Biodiversity objective and reporting Local nature recovery strategies Conservation Habitats Regulations Tree felling and planting Use of forest risk commodities in commercial activity
National Planning Policy Framework (NPPF) (2021)	Cross-cutting	The updated NPPF sets out government's planning policies for England and how these are expected to be applied. Achieving sustainable development is at the heart of the NPPF whereby it has three overarching objectives in the social, economic, and environmental spheres. Planning laws require that the National Planning Policy Framework be taken into account in preparing a development plan. Planning policies and decisions must also reflect relevant international obligations and statutory requirements.
A Green Future: Our 25 Year Plan to Improve the Environment, UK Government (2018)	Cross-cutting	The 25 Year Plan sets out the Governments actions for improving the health of the natural environment. It includes six actions in order achieve clean air, plentiful and clean water, thriving plants and wildlife, reduced harm from environmental hazards, sustainable resource use and enhanced beauty, heritage and engagement with the natural environment: Using and managing land sustainably Recovering nature and enhancing the beauty of landscapes Connecting people with the environment to improve health and wellbeing Increasing resource efficiency, reducing pollution and waste Securing clean, productive and biologically diverse seas and oceans Protecting and improving the global environment
The draft Environment Bill 2020	Cross-cutting	The Bill was first introduced to parliament in October 2019 and then reintroduced in January 2020. The Bill is currently under review by a Public Bill Committee. The Environment Bill will support the 25 Year Environment Plan and brings about urgent and meaningful action to combat the environmental issues that the UK is facing. It sets out a requirement for biodiversity net gain which includes at least a 10% improvement in biodiversity value for new development. It also includes details on: Creating a new governance framework for the environment A new direction for resources and waste management Improving air quality Securing our water services Enhancing our green spaces Updating laws on chemicals (REACH)
Securing the Future – Delivering the UK Sustainable Development Strategy (2005)	Cross-cutting	The Strategy for sustainable development aims to '…enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations.' Guiding principles: Living within environmental limits Ensuring a strong, healthy, and just society

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		Achieving a sustainable economy Promoting good governance Using sound science responsibly UK priorities for immediate action Sustainable consumption and production Climate change and energy Natural resource protection and environmental enhancement Sustainable communities
The Natural Choice: Securing the Value of Nature, Defra (2011)	Cross-cutting	The White Paper outlines the Government's vision for the natural environment for the next 50 years.
Marine and Coastal Access Act (2009)	Cross-cutting	The Act sets out to protect marine functions, activities and wildlife. It commits the UK to ambitions actions and sets out the provisions for Marine Conservation Zones (MCZs), a Marine Planning system, reform of inshore fishers, amongst others.
The Wildlife and Countryside Act 1981 (as amended)	Cross-cutting	The Wildlife and Countryside Act is the main Act which protects animals, plans and habitats in the UK. It implements the Bern Convention and the Birds Directive and contains details of European and national designated sites, protection for designated species.
Environment Protection Act 1990	Cross-cutting	The Act aims to set out provisions for the control of pollution to the environment (air, water and land) by regulating the management of waste and emissions. It places a duty of care on any business or person who produces waste to do so carefully and in line with requirements.
Countryside and Rights of Way (CROW) Act	Cross-cutting	The Act was introduced in 2000 with the intention to give greater freedom for people to explore open countryside and contains provisions to introduce a new statutory right of access for open-air recreation to mountain, moor, heath, down and registered common land. It also includes a power to extend the right to coastal land by order and enables landowners voluntarily to dedicate irrevocably any land to public access.
The Natural Environment and Communities Act 2006 (NERC Act)	Cross-cutting	The Natural Environment and Rural Communities Act is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy. It is about conserving and enhancing places and nature and helping people to enjoy them – taking a wider view, pursuing environmental management which encompasses access and recreation, and aiming where possible to achieve economic and social outcomes alongside conservation goals.
Creating a better place: Our ambition to 2020, Environment Agency (2018)	Cross-cutting	This aims to protect and improve natural resources in the UK and sits alongside Defra's 25 Year Environment Plan. It sets out the Environment Agency's vision, principles and purpose until 2020 as well as how they aim to deliver against the 25 Year Environment Plan.
UK National Ecosystem Assessment Follow-on (2014)	Cross-cutting	The 2011 UK National Ecosystem Assessment (UK NEA) which identified that the natural world and its ecosystems are important to our well-being and economic prosperity, however they are consistently undervalued. This follow on provides new information and tools to help decision makers integrate the value of ecosystems into decision making.

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National Infrastructure Delivery Plan 2016–2021, Infrastructure and Projects Authority (HM Government) (2016)	Cross-cutting	Sets out the Government's plans for economic infrastructure over the next 5 years to support delivery of housing and social infrastructure. The Plan recognises that water services are likely to come under increasing pressure because of population growth and a changing climate. The Plan sets out the following key objectives for water: Start of construction on the Thames Tideway Tunnel Reductions in average bills of about 5% in real terms Further expenditure from 2020 with the start of Asset Management Period 7
Fixing the foundations: Creating a more prosperous nation, HM Government (2015)	Cross-cutting	The reports sets out the importance of productivity and the Government's vision to delivering a UK economy which is the richest of all major economies by 2030. It includes two pillars for raising productivity: Encouraging long term investment in economic capital, including infrastructure, skills and knowledge. Promoting a dynamic economy that encourages innovation and helps resources flow to their most productive use.
Environment Act 1995	Cross-cutting	The Act set out provisions for the creation of a number of government agencies including the Environment Agency and the Scottish Environment Protection Agency (SEPA). It also set out new standards for environmental protection.
The Environmental Damage (Prevention and Remediation) (England) Regulations 2015	Cross-cutting	The Regulations seek to ensure action is taken put any environmental damage right and are based on the 'polluter pays principle'. It transposes the European Commission Environmental Liability Directive into UK law. The Regulations require action in response to the most significant cases, covering specific types of damage to species and habitats; damage to water; or risks to human health from contamination of land.
Environmental Assessment of Plans and Programmes Regulations 2004	Cross-cutting	The regulations transpose the SEA Directive into UK law which requires an assessment of the effects of certain plans and programmes on the environment. Article 3 (2b) states that SEA is required for plans and programmes which are prepared for water management, set the framework for development consents, and/or are likely to have a significant environmental effect.
Creating a great place for living: together we are building a green and healthy future (2018)	Cross-cutting	The Defra group sets out make air purer, water cleaner, land greener and food more sustainable, and their mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state. There are 10 goals which underpin this mission and include: Sustainable farming and food Pure air, clean rivers and a resilient water supply Healthy seas and oceans Beautiful landscapes, flourishing wildlife and native species Thriving rural economies and communities Efficient resource use and reduced waste Protecting animals and plants from health risks Resilient communities and economies Great places for living for people and animals Green global Britain

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Planning (Listed Buildings and Conservation Areas) Act 1990	Historic Environment	An Act of Parliament that altered the laws on granting of planning permission for building works, notably including those of the listed building system in England and Wales
The Ancient Monuments and Archaeological Areas Act 1979	Historic Environment	This Act is concerned with the provisioning, investigation, recording and the preservation and protection of archaeological sites and ancient monuments.
Climate Change and the Historic Environment, English Heritage (2008)	Historic Environment	The statement recognises the climate change impacts the UK is facing and how this poses a risk to the historic environment.
Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment, Historic Environment (2016)	Historic Environment	Provides guidance on SEA in relation to the historic environment.
The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, Historic Environment (2017)	Historic Environment	Sets out guidance on managing change within the settings of heritage assets, including archaeological remains and historic buildings, sites, areas, and landscapes, against the backdrop of the NPPF. It gives 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.
Ancient Woodland and Veteran Trees: Protecting them from development, Forestry Commission and Natural England (2014)	Landscape	Sets out guiding principles for considerations when developments affect ancient woodlands or veteran trees. Ancient woodland is defined as an irreplaceable habitat which is important for wildlife, soils, recreational value and cultural, historical and landscape value. Ancient tree is one which attributes include the following: great age, size, condition, biodiversity, cultural heritage and value. The guidance also states that all ancient trees are veteran trees but not all veteran trees are ancient. A veteran tree may not be very old, but it has decay features, such as branch death and hollowing which contribute to its biodiversity, cultural and heritage value. When making decisions the following should be considered: conserving and enhancing biodiversity reducing the level of impact of the proposed development on ancient woodland and ancient and veteran trees
Our Waste, Our Resources: A Strategy for England, HM Government (2018)	Material Assets	The Strategy recognises that natural capital is one of our most valuable assets and sets out how the Government plans to preserve the stock of material resources by minimising waste, promoting resource efficiency and moving towards a circular economy. They also set out how they aim to minimise damage to the natural environment and is aligned to the Government's 25 Year Environment Plan. This is our blueprint for eliminating avoidable plastic waste over the lifetime of the 25 Year Plan, doubling resource productivity, and eliminating avoidable waste of all kinds by 2050.

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Safeguarding our Soils - A strategy for England, Defra (2009)	Soil	The Strategy recognises that soil is fundamental resource and sets out a 2030 vision for the sustainable management of soil where degradation threats are tackled successfully. It aims to improve the quality of England's soils and safeguard their ability to provide essential services for future generations.
Diffuse Water Pollution Theme Plan	Water	Diffuse Water Pollution (DWP) refers to the accumulation of minor polluting sources that are individually quite insignificant, but when put together can have a significant impact on water quality. Approximately 63% of water dependent Natura 2000 sites are affected by this pollution, of which 93% identify diffuse water pollution, although it is often difficult to identify the source. The strategy for addressing DWP needs to be long-term and adaptable to a constantly developing evidence base, as well as being capable of incorporating new and improved mechanisms. The plans direct Natural England, the Environment Agency, and other stakeholders towards planning the ways in which they focus their efforts on Natura 2000 sites and the surrounding areas, to improve the efficiency and effectiveness of the management of issues in these sites. The plan outlines key issues for further action, as well as gaps in current mechanisms and approaches. There is no legal or political grounding in the plans, they just provide recommendations that help Natura 2000 sites attain their target conservation status.
Water Resources Act 1991	Water	The Act sets out the functions of National Rivers Authority (now the Environment Agency) and introduced water quality classifications and objectives for the first time.
Water Industry Act 1991	Water	The Act sets out the main powers and duties of the water and sewerage companies, thus replacing those set out in the Water Act 1989 and defined the powers of the Director General of Water Services (now the Water Services Regulation Authority (Ofwat)).
Water Act 2003 (as amended)	Water	The Act amends the Water Resources Act and Regulations 1991 and the Water Industry Act 1991. The Act has the following four broad aims: the sustainable use of water resources strengthening the voice of consumers a measured increase in competition the promotion of water conservation
Preparing for a drier future: England's water infrastructure needs, National Infrastructure Commission (2018)	Water	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. It recognises that water shortages is a risk in England and that climate change alongside an increasing population A (especially in the drier south and east) and the need to protect the environment will result in further challenges.
Draft National Policy Statement for Water Resources Infrastructure, Defra (2018)	Water	The draft National Policy Statement for Water Resources Infrastructure (NPS) sets out the need and government's policies for the development of nationally significant infrastructure projects relevant to water resources in England. It is aligned with the goal of clean and plentiful water as set out in the UK Government's 25 Year Environment Plan and recognises that a twin track approach is required to secure resilient water supplies.
Water for Life White Paper, Defra (2011)	Water	This White Paper sets out a vision for future water management in which the water sector is resilient; water companies are more efficient and customer focused; and water is valued as the precious and finite resource it is. It explains that everyone has a part to play in the realisation of this vision. It sets out the principles and timetable for an overhaul of the abstraction regime, which governs how and when water can be taken from the environment for use by business, agriculture and the public; and explains how improved

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		interconnections between water catchments will allow water to be moved more easily around the country to areas of need. It details Government policy on charging for water and providing help to those who struggle to afford their bills.
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (as amended)	Water	The Regulations transpose the EC WFD in UK law. They will help implement the WFD requirement in England and Wales. They aim to protect and enhance the quality of: Surface freshwater (including lakes, streams and rivers) Groundwaters Groundwater dependant ecosystems Estuaries Coastal waters out to one mile from low-water
Protect groundwater and prevent groundwater pollution, Environment Agency (2017)	Water	It aims to avoid negative impacts on groundwater sources including impacts of pollution by providing guidance on discharging or abstracting from groundwater sources.
Groundwater protection technical guidance, Environment Agency (2017)	Water	It aims to avoid negative effects on the quality and quantity of groundwater resources by providing guidance on the inputs of substances and pollutants to groundwater, discernibility of hazardous substances and when geological formations can be determined permanently unsuitable for other purposes.
The Environment Agency's approach to groundwater protection, Environment Agency (2018)	Water	These position statements describe the Environment Agency's approach to managing and protecting groundwater. They update Groundwater protection: principles and practice (GP3).
The Groundwater (England and Wales) Regulations 2009	Water	The Regulations transpose the EU Groundwater Directive (2006/118/EC) into UK law. The Regulations set out to protect groundwater from being polluted by hazardous substances.
Flood and Water Management Act 2010	Water	The Act seeks to address the threat of flooding and water scarcity. The Act takes forward a number of recommendations from the Pitt Review into the 2007 floods and places new responsibilities on the Environment Agency, local authorities and others to manage the risk of flooding. Climate projections suggest extreme weather will happen more frequently in the future and this Act is central to reducing the flood risk associated with extreme weather.
National Flood and Coastal Erosion Risk Management Strategy for England, Environment Agency (2020)	Water, Climatic Factors, Population, Human Health	The Strategy sets out the long-term delivery objectives the nation should take over the next 10 to 30 years as well as shorter term, practical measures risk management authorities should take working with partners and communities. It includes the following long term vision: 'a nation ready for, and resilient to, flooding and coastal change – today, tomorrow and to the year 2100', and includes the following three long-term ambitions: Climate resilient places Today's growth and infrastructure resilient in tomorrow's climate

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		A nation ready to respond and adapt to flooding and coastal change
The Flood and Coastal Erosion Risk Management Policy Statement, Defra (2020)	Water, Climatic Factors, Population, Human Health	The Policy Statement sets out the long-term goal of the Government to create a nation which is resilient to future flood and coastal erosion, and therefore protects people, the environment and the economy. The National Flood and Coastal Erosion Strategy has helped to inform this policy statement. It identifies five key areas for action which include: Upgrading and expanding our national flood defences and infrastructure Managing the flow of water more effectively Harnessing the power of nature to reduce flood and coastal erosion risk and achieve multiple benefits Better preparing our communities Enabling more resilient places through a catchment-based approach
Flood risk assessments: climate change allowances, Environment Agency (2016)	Water, Climatic Factors	The guidance sets out how climate change should be accounted for when local authorities prepare strategic flood risk assessment as well as when developers and their agents when they prepare flood risk assessments for planning applications, and development consent orders for nationally significant infrastructure projects. The guidance provides allowances for anticipated change of the following and are aligned to each river basin in some cases: peak river flow; peak rainfall intensity; sea level rise; and offshore wind speed and extreme wave height.
The Water Resources Management Plan Regulations 2007	Water	The regulations set out the statutory duty for water companies to prepare and publish a WRMP.
Water Resources Planning Framework (2015-2065), Water UK (2016)	Water	The project aims to develop a high-level strategy and framework for the long-term management and planning of water resources in England and Wales. It identifies the challenges facing water resources including climate change, resilience to droughts and demand growth and presents options to mitigate the issues.
Water Supply (Water Quality) Regulations 2016 (as amended)	Water	The regulations consolidate legislation concerning the quality of water supplies for human consumption in England. They also apply in Wales where the water undertaker or licensee is primarily based in England.
National Policy Statement for Wastewater (2012)	Water	National Policy Statement (NPS) sets out Government policy for the provision of major wastewater infrastructure. It aims to make existing policy and practice clear and transparent in relation to nationally significant wastewater infrastructure.
Climate change approaches in water resources planning – Overview of new methods, Environment Agency (2013)	Water, Climatic Factors	The report explores different ways in which the possible impacts of climate change could be incorporated into Water Resource Management Plans (WRMPs) in England and Wales. A number of improvements are suggested, but not limited to: Undertaking vulnerability assessments to evaluate Water Resource Zones (WRZs) vulnerability to current and future climate and using the outcomes to determine the level of modelling required to assess future impacts of climate change. Alternative methods to scaling the impacts of climate change from the base year to the 2030s and beyond. Headroom assessment should clearly distinguish between climate and non-climate risks and report outputs for specific reference levels of headroom.

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Drought response: our framework for England, Environment Agency (2017)	Water, Climatic Factors	The document outlines the national framework for how drought is managed by the Environment Agency, the government and water companies to reduce the effects on the people, business and the environment. It sets out how drought affects different areas of England, who is involved in management drought and how those stakeholders, and how drought is manged, monitored and reported on.
Future Water: The Government's water strategy for England, Defra (2008)	Water	The Strategy sets Defra's vision for the water sector up to 2030 and outlines the steps they will implement to achieve that vision. Their vision is where rivers, canals, lakes and seas have improved for people and wildlife, with benefits for angling, boating and other recreational activities, and with continued provisions for excellent quality drinking water. It is structured around water supply and demand, water quality in the natural environment, surface water drainage, river and coastal flooding, greenhouse gas, water charging, the regulatory framework and innovation.
Water Resources Planning Guideline, Environment Agency (2016)	Water	This document provides guidance on the requirements and process for water resource planning through WRMPs to ensure resilient and sustainable water supplies. It is currently being updated and is out for public consultation until October 2020.
The Urban Waste Water Treatment (England and Wales) Regulations 1994	Water	The Regulations transpose the EU Urban Waste Water Treatment Directive (91/271/EEC) and sets out to regulate the disposal of sewage.
The Nitrate Pollution Prevention Regulations 2015	Water	The Regulations transpose EU Nitrates Directive (91/676/EEC) into UK law and aim to reduce the pollution in the water environment from nitrates.
Managing Water Abstraction, Environment Agency (2016)	Water	Sets out how the Environment Agency manage water resources in England and outlines the technical, legal and policy requirements behind the abstraction licensing strategies.
Marine Plans – South East Inshore, South Inshore, South Offshore (Marine Management Organisation)	Water	A marine plan: Sets out priorities and directions for future development within the plan area Informs sustainable use of marine resources Helps marine users understand the best locations for their activities, including where new developments may be appropriate. Each of the 11 marine plan areas will have a marine plan with a long-term (20 years) view of activities and will be reviewed every three years. There will be ten marine plans as the North West will have a single plan following requests to have a single process and one plan for these areas. All marine plan areas are scheduled to have a plan by 2021.
UK Marine Policy Statement (2011)	Water	The UK Marine Policy Statement (MPS) provides the policy framework for the marine planning system. It provides the context for marine plans. Marine plans put into practice the objectives for the marine environment that are identified in the MPS alongside the National Planning Policy Framework (NPPF) and the Localism Act 2011. Where there is no marine plan in place, the MPS sets the direction for decisions that affect the marine areas, such as granting licences for all public bodies.

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Scottish Water's Strategic Plan (2020)	Cross-cutting	This plan summarises how Scottish Water will transform how their services are delivered as they deal with climatic threats, replace their ageing assets, and play their part in reducing emissions to beyond net zero over a 25-year period. Scottish Water have published a Delivery Plan for the 2021-27 period setting out their plans an priorities for the first part of the strategic plan period, including milestones and targets that will be updated annually thereafter with their stakeholders. Each year they will also publish a performance report setting out all aspects of their current performance, future prospects, and key areas of learning and future improvement.
Regional and Local		
Site Improvement Plans for Natura 2000 Sites, Natural England	Biodiversity	Site Improvement Plans (SIPs) have been developed for each Natura 2000 site in England as part of the Improvement Programme for England's Natura 2000 Sites (IPENS). Natura 2000 sites is the combined term for sites designated as Special Areas of Conservation (SAC) and Special Protected Areas (SPA). There are 23 SACs and 11 SPAs within the Northumbrian Water supply region. The plans provide a high level overview of the issues (both current and predicted) affecting the condition of the Natura 2000 features on the site(s) and outlines the priority measures required to improve the condition of the features. It does not cover issues where remedial actions are already in place or ongoing management activities which are required for maintenance.
Local Development Plans (Various)	Cross-cutting	Local Development Plans or Core Strategies are the main framework for planning in a local authorities and set out the long-term spatial vision to guide sustainable development. They include policies on key area such as housing, transport, the natural environment, employment and economic development, carbon reduction and resources, amongst others. The following local authorities are wholly or partially within the Northumbrian Water supply region: Carlisle, County Durham UA, Darlington UA, Gateshead, Hambleton, Hartlepool, Lake District National Park, Middlesbrough UA, Newcastle upon Tyne, North Tyneside, North York Moors, Northumberland UA, Redcar & Cleveland UA, Richmondshire, Scarborough, South Tyneside, Stockton-on-Tees UA, Sunderland, Yorkshire Dales National Park.
Public Rights of Way Improvement Plans (ROWIPs)	Cross-cutting	ROWIPs outline how local authorities aim to improve public rights of way within their local area in order to ensure improved accessibility, connectivity and quality of the network for all.
Local level Green Infrastructure Plans and Strategies	Cross-cutting	Green Infrastructure Strategies set out how local authorities will improve provision of and access to quality green spaces.
National Natural Capital Atlas: Mapping Indicators, Natural England (2020)	Cross-cutting	The state of the natural capital in England is outlined in this report through a series of maps and indicators to show the quality, quantity and location of natural assets as well as the ecosystem services that they provide. Quantity indicators are divided into eight broad habitat type categories including freshwater; farmland; grasslands; mountain, moor and heath; woodland; urban; coastal; and marine. Quality indicators are also split out into broad categories which cover vegetation; nutrient and chemical status; soil / sediment process; species composition; vegetation; and cultural. These indicators are designed to inform decision making and to help to achieve the commitments set out in the 25 Year Plan, and also acts a baseline to measure change.
AONB Management Plans	Landscape	The Management Plans summarise the key issues facing the AONBs and outline the management policies and actions required to conserve these areas. The following Plan is relevant to the Northumbrian Water supply region:

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		The Northumberland Coast AONB Management Plan – 2020-2024 – key issues for the site include climate change and the potential for sea level rise and the possible impact on important intertidal habitats along the coastline, erosion, compaction and loss of soil organic matter. The North Pennines AONB Management Plan – 2019-2024 – key issues include conservation of peatland and other soils, conserving the dark night skies and promoting and protecting archaeological sites and features and historic buildings and structures.
National Character Area (NCA) Profiles, Natural England	Landscape	The profiles for each outline the characteristics which are unique to that area and help to form distinctive sense of place. There are 17 NCAs within the Northumbrian Water supply region which include: North Northumberland Coastal Plain Northumberland Sandstone Hills Cheviot Fringe Cheviots Border Moors and Forests North Pennines Tyne Gap and Hadrian's Wall Mid Northumberland South East Northumberland Coastal Plain Tyne and Wear Lowlands Durham Magnesian Limestone Plateau Durham Coalfield Pennine Fridge Pennine Dales Fringe Tees Lowlands North Yorkshire Moors and Cleveland Hills
Northumbria River Basin Management Plan (2015)	Water	The purpose of a river basin management plan is to provide a framework for protecting and enhancing the benefits provided by the water environment. To achieve this, and because water and land resources are closely linked, it also informs decisions on land-use planning. The following have been identified as key pressures for the basin: Physical modifications - affecting 38% of water bodies in this river basin district Pollution from waste water – affecting 13% of water bodies in this river basin district Pollution from towns, cities and transport - affecting 4% of water bodies in this river basin district Changes to the natural flow and level of water - affecting 2% of water bodies in this river basin district Negative effects of invasive non-native species - affecting 1% of water bodies in this river basin district Pollution from rural areas - affecting 10% of water bodies in this river basin district Pollution from abandoned mines – affecting 9% of water bodies in this river basin district
Catchment Flood Management Plans (2009): Northumbria River Basin District	Water	CFMPs have been produced to assess inland flood risk across England and Wales. The CFMPs relevant to the WRMP are detailed in the column to the left. The CFMPs consider all types of inland flooding: from rivers, ground water, surface water and tidal flooding (but not coastal flooding, which is covered by Shoreline Management Plans. The role of the CFMPs is to establish flood risk management policies which will deliver sustainable flood risk management for the long term. CFMPs should be used to inform planning and decision making by key stakeholders such as the Environment Agency, local authorities, Internal Drainage Boards, water companies and other utilities; transportation planners; land owners, farmers and land managers; the public and businesses to enhance their understanding of flood risk and how it will be managed. The CFMPs identify six generic flood risk management policies: Policy 1- Areas of little or no flood risk where the EA will continue to monitor and advise: this policy will tend to be applied in those areas where there are very few properties at risk of flooding. It reflects a commitment to work with the natural flood processes as far as possible.

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		Policy 2 - Areas of low to moderate flood risk where the EA can generally reduce existing flood risk management actions: this policy will tend to be applied where the overall level of risk to people and property is low to moderate. Policy 3 - Areas of low to moderate flood risk where the EA are generally managing existing flood risk effectively: this policy will tend to be applied where the risks are currently appropriately managed and where the risk of flooding is not expected to increase significantly in the future. Policy 4 - Areas of low, moderate or high flood risk where the EA are already managing the flood risk effectively but where they may need to take further actions to keep pace with climate change: this policy will tend to be applied where the risks are currently deemed to be appropriately-managed, but where the risk of flooding is expected to significantly rise in the future. Policy 5 - Areas of moderate to high flood risk where the EA can generally take further action to reduce flood risk: this policy will tend to be applied to those areas where the case for further action to reduce flood risk is most compelling, for example where there are many people at high risk, or where changes in the environment have already increased risk. Policy 6 - Areas of low to moderate flood risk where the EA will take action with others to store water or manage run-off in: locations that provide overall flood risk reduction or environmental benefits. This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. To select the most appropriate policy, the CFMPs consider how the social, economic and environmental objectives are affected by flood risk management activities under each policy option. The policies identified in the CFMPs will be delivered through a range of delivery plans, projects and actions.
Catchment Abstraction Management Strategies (CAMS) (2016)	Water	The Catchment Abstraction Management Strategy (CAMS) set out how the EA will manage water abstraction. They outline where water is available, and also, if relevant, where the EA needs to reduce current rates of abstraction. Each CAMS provides an overview of the catchment area and characteristics, including abstractions, geology, hydrology, hydrometry, water quality and discharges, ecology and conservation, recreation and navigation. The CAMS make information on water resources and licensing practice publicly available and allow the balance between the needs of abstractors, other water users and the aquatic environment to be considered in consultation with the local community and interested parties. CAMS are also the mechanism for managing time limited licences by determining whether they should be renewed and, if so, on what terms.
Meeting our Future Water Needs: a National Framework for Water Resources, Environment Agency (2020)	Water	The Framework explores the long-term needs of all sectors that depend on a secure supply of water, taking into account the commitments set out in the UK Government's 25 Year Plan. It sets out the principles, expectations and challenges for the five regional groups which cover England's water supply in order to take a collaborative approach to address the current and future challenge of water resource planning. The importance of regional planning is paramount to address the following challenges: Resilience to drought Greater environmental improvement Reducing water use in the long-term Leakage reduction Reducing the use of drought permits and drought orders Increasing supplies Moving water to where it is needed

Policy, Plan or Programme	Topic	Key objectives, guidance and references
Long-term water resources environmental destination, Environment Agency (2020)	Water	Regional water resources plans provide the opportunity to deliver an environmental destination for water resources where environmental issues related to water supply and demand are addressed in the long term. The document provides guidance for regional groups and water companies to help to integrate the long-term environmental water resources needs when developing their regional plans. It sets out a standard approach to allow for both consistency whilst allowing for flexibility depending on specific needs and issues. It sets out the following: What the environmental destination should look like: Enable environmental resilience and protection for water resources up to at least 2050 through a variety of actions. Stages needed to propose a long-term environmental destination: Review national policy, use scenarios, engage with stakeholders, develop environmental destination and carry out testing. Defining a long-term environmental destination: Use the scenarios from the National Framework to support and inform the destination development. What a long-term environmental destination should include: Meet current regulatory requirements for abstraction and integrate future needs. Actions to meet an environmental destination: Resilience to climate change, integrates stakeholder views, considers costs and scale, supports wider government ambitions, prioritises the most vulnerable and protected sites, integrates a catchment approach and nature based solutions, supports net gain principles, uses the best data and is not constrained by previous decisions. The guidance also includes reference to how to carry out engagement, set milestones and outlines the governance for implementing a long-term environmental destination.
Water Resources Planning Guideline, Various (2021)	Water	The guideline was published by the Environment Agency, Natural Resources Wales and Ofwat. It is relevant to water companies in England and Wales and also to those producing regional plans. It provides guidance on how to produce a Plan (WRMP or Regional Plan), taking into account all the relevant statutory requirements and government policy. The guidance sets out the national, regional and local planning context, how to form and develop a WRMP, forecasting supply and demand, uncertainty allowances, option identification and developing a best value plan.
Forward programme 2021-22, RAPID (2021)	Water	The Regulator's Alliance for Progressing Infrastructure Development (RAPID) is a partnership formed of Ofwat, the Environment Agency and the Drinking Water Inspectorate with Natural Resources Wales involved in an advisory capacity for Welsh schemes. To achieve the vision for high quality, resilient and environmentally beneficial water resources which meet customer needs, Strategic Resource Options (SROs) are required and involve collaboration and complex arrangements between water companies and regions. Funding was allocated to water companies to develop these SRO infrastructure supply solutions and RAPID were established to support their development. RAPID undertakes the following roles: Gated process: The first role of RAPID is to provide oversight to the gated process which has been developed to ensure SROs are on track and meet needs in a cost and environmentally efficient way. Gate 1 submission has already taken place with Gate 2 due to complete in October 2022. Water Resources National Framework: RAPID acts as an enabler for the National Framework, supporting the co-ordination of the five regional groups and helping to shape regional plans. Regulatory and commercial framework: Thirdly, RAPID are developing the regulatory and commercial framework to support the timely delivery of water resources infrastructure. For the period 2021-2022, RAPID have identified the following five key delivery areas: developing a positive culture and driving performance; providing effective oversight of the strategic solutions engaging people and organisations; achieving effective long-term water resources resilience; and exploring and addressing regulatory and commercial opportunities, gaps and barriers.

Policy, Plan or Programme	Topic	Key objectives, guidance and references
Water Resources North's Regional Plan (2022)	Cross-cutting	This plan sets out Water Resources North's (WReN) aims for the region, that is to have a sustainable, long-term plan for water resources that protects the region's resilience in the face of challenges such as climate change, population growth, and changing demands for water use. In producing their Regional Plan, WReN have considered the aims and objectives of the Water Resources National Framework as well as other policies and plans relevant to England. The document follows a nationally agreed overarching structure. It sets out the region's baseline position, forecasts the region's future resource position, and summarises WReN's approach to developing an adaptive, best-value plan at region level, in the context of the decision-making approaches and supporting metrics. It also summaries the most notable choices and decision areas for the plan, as well as the resulting indicative solutions to meet deficits, and the outcomes of scenario and stress tests. In addition, it explains how WReN have represented environmental destination and accounted for non-public water supply needs as well as customer and stakeholder priorities in the development of the plan.
Yorkshire Water's Draft Water Resources Management Plan 2024 (2022)	Cross-cutting	This plan is a key component of Yorkshire Water's long-term strategic planning framework. It sets out how they plan to maintain a safe and reliable water supply to customers over the long term. In their plan, Yorkshire Water are forecasting a supply demand deficit in the future, resulting from the impacts of climate change, population growth, the need to protect the environment and from the loss of imported water from a neighbouring water company. As a result, the plan outlines how Yorkshire Water need to take action to ensure resilient water supplies into the future. Their plan is to mitigate the deficit through a twin track approach to demand reduction and an increase in supply options. Demand options include leakage reduction, smart metering, and water efficiency. In respect of supply options, in the early part of their plan (2025-2030) Yorkshire Water will make use of new supplies including four new borehole sources and associated water treatment works. They have also included plans for two new river abstractions and associated treatment. In the medium term their plans include a treated water transfer within their operational areas to offset the loss of imported water from outside their region. In the long term, to mitigate the future resource reductions associated with the need to protect sensitive river environments their plans include a transfer from Northumbrian Water and a new storage and treatment capacity at existing or new water treatment works.
United Utilities' Revised Draft Water Resources Management Plan 2024 (2023)	Cross-cutting	This plan is a key part of United Utilities wider plans for a stronger, greener and healthier Northwest. It sets out their strategy to make sure the Northwest has an adequate supply of water to meet demand from 2025 to 2050 and beyond. In their plan, United Utilities are forecasting that without the drought supply and demand measures included in their drought plan there is a potential deficit in their Strategic Resource Zone. This is caused mainly by rising population, climate change and the need to reduce abstraction to protect the environment. All of their other resource zones maintain a positive supply-demand balance across the 25-year planning horizon, meaning that they have a supply-demand surplus. As a result. United Utilities must respond to the forecast deficit in their Strategic Resource Zone from 2025. This plan sets out how United Utilities plan to resolve the deficit, particularly through their demand management strategy.
Northumbrian Water		
Environment Strategy (2021)	Environment	The strategy sets out guidance on overall assets and operations management to avoid environmental effects. It includes guidance on interactions with the water environment to protect and improve rivers and beaches within the region and the overall environmental conditions.
Biodiversity Strategy (2021)	Biodiversity	This strategy supports the Government's national framework on biodiversity (July 2012) and uses an identified list of priority habitats and species called the Section 41 lists. The Section 41 lists are part of the Natural Environment and Rural Communities Act which

Policy, Plan or Programme	Topic	Key objectives, guidance and references
		upholds all water and sewerage companies to maintain, and where possible, enhance biodiversity on their landholdings. This strategy allows for engagement with local environmental partners in the region to deliver site management work and enhancement schemes.
Pollution Incident Reduction Plan (2020)	Water	The purpose of this plan for 2020-25 is to set out guidance for reducing pollutions and meeting the zero pollutions goal as a result of assets and operations. The plan considers expectations from varied stakeholders (the government, regulators, customers, environmental NGO's and the customer challenge group) with the objectives to maintain an industry-leading pollution performance; and reduce the number of pollution incidents from wastewater and water operations. This plan further includes proven business-as-usual activities and interventions and highlights transformative programmes to maintain and improve overall performance.
Draft Drought Plan 2022 (2021)	Water	The purpose of this plan is to identify how future droughts in the region will be managed; what measures are available to reduce demand and support supplies; what triggers can be used to identify when actions are required and communication strategies with customers during a drought. It identifies and advises on 4 levels of water restrictions; maps out the drought management process in 7 stages; highlights the order of drought implementations actions in 4 levels and summarizes extreme drought measures as detailed actions.
PR19 Business Plan (2020)	Cross Cutting	This plan is structured across six key themes as identified during the consultation process with stakeholders. The purpose of this plan is to provide guidance on the detailed goals and innovations needed in each theme to deliver set out objectives and aims. The themes include: Unrivalled Customer Experience - delivering a package of measures to support an unrivalled customer experience. Affordable and Inclusive services - ensuring water and sewerage services remain affordable for all customers. Reliable and Resilient services - anticipating change in services, plan and make correct long-term decisions. Leading in Innovation - keeping updated with innovative solutions through technological advances and changing political and physical climates. Improving the Environment - creating a step change in environmental activities with an aim to demonstrate leadership and improve the environment within the region. Building successful economies in the regions - demonstrating leadership and wider contributions to life within the region.
Safety, Health and Environment (SHE) Statement (2020)	Cross cutting	This statement highlights the overall ethical responsibility of the company by setting out clear directions on safety, health and the environment. It reflects the company safety direction, legislative and regulatory requirements which will be under a continuous review, with any significant changes identified and the policy updated to reflect the same.
Emission Possible Plan to achieve net zero by 2027 (2021)	Climatic Factors	The purpose of this plan is to identify the progress by the company so far regarding reduction of carbon emissions from 303,000 tonnes in 2008 to 56,000 tonnes in 2020 as well as the plan to hit the target of zero emissions by 2027. This plan recognizes the urgency and priorities for interventions needed to reach net zero emissions and provides information on possible solutions for the same: Fossil fuel reductions, Natural Gas Reductions, fuel change in operational vehicles, using renewables, managing offsets and implementing innovation strategies throughout the company.
Leakage Target (2020)	Water	This report identifies the use of space satellites, drones and the public support (through the Leakage Portal) to reduce water leakage throughout the network with an aim to reduce water leakage by 17.5% by 2025.
Water Environment Improvements / Blue spaces Scheme (2021)	Water	This scheme identifies, develops and includes water environment improvement projects throughout the network worth a £1 million for the period of 2020-25. It includes an anticipated overall 250km water environment improvement in areas that can be accessed and enjoyed for their water and wildlife, and the associated health and wellbeing benefits.

D. Baseline Review and Baseline Maps

D.1 Introduction

D.1.1 Current baseline information for the environment and socioeconomics was reviewed for the NWL WRMP24 area. The baseline was collected from published sources as referenced in the text and is summarised in the sections below. The baseline information forms an evidence base against which environmental issues or opportunities resulting from the WRMP24 can be predicted and assessed. The baseline information is presented under the SEA Regulations topics:

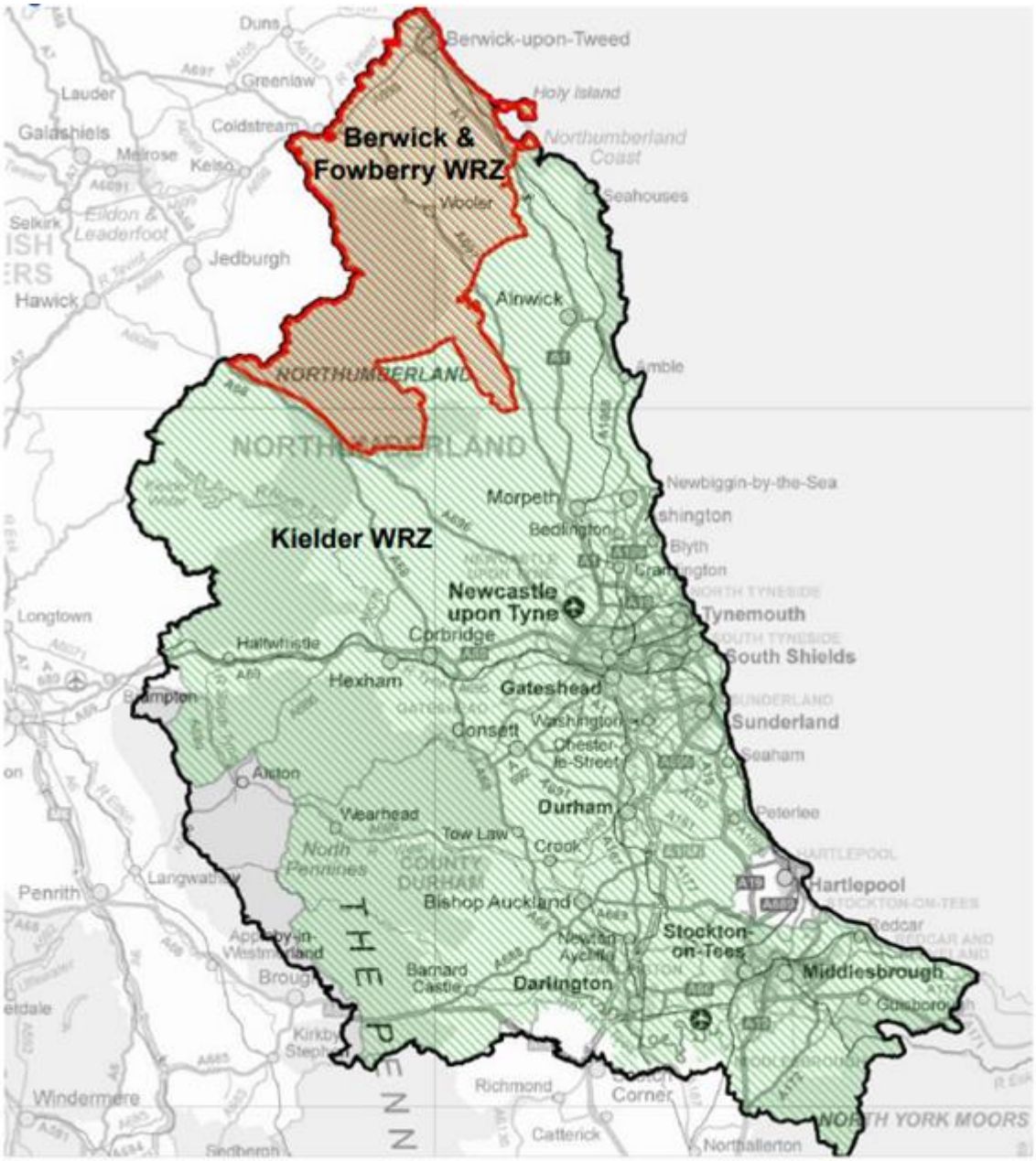
- Biodiversity, flora, and fauna
- Water
- Soil
- Air
- Climatic factors
- Population and human health
- Historic environment
- Landscape
- Material assets

It should be noted the NWL WRMP24 covers a substantial geographical area. Therefore, the baseline is a high-level review of conditions within the WReN region where appropriate (Figure D.1) and therefore extending to the Northumbrian region rather than on specific options. For example, there are potential effects both from the transfer of water outside the supply area or from options close to the plan boundary with potential pathways affecting receptors outside the supply area. The baseline GIS developed to facilitate undertaking the assessments and reporting includes a buffer so that additional receptors (such as designated sites) and potential pathways are captured and can be included in the assessments. Figure D.5 maps surface water catchments that could potentially be affected and that fall either partially, or wholly outside the WReN region and the Northumbrian Water supply area. These include the:

- Northumberland Rivers
- Tyne
- Wear

Tees

Figure D.1: Northumbrian Water Region



Source: Northumbrian Water, Water Resource Management Plan, 2019

D.2 Biodiversity, Flora and Fauna

Designated Sites

D.2.1 The Northumbrian water region contains numerous Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR), Marine Protected Areas (MPA) and Marine Conservation Zones (MCZ). The number and type of terrestrial ecological sites across the Northumbrian water region is presented in Table D.4. Should plan options be proposed that have the potential to impact Marine Sites or freshwater dependent terrestrial ecosystems the baseline will be extended will be assessed within the SEA.

Table D.4: Ecological sites in the NW WRZ

Designated Site	Total Number	
	Berwick- Fowberry	Kielder
SAC	4	19
SPA	3	8
Ramsar	3	5
SSSI	8	251
NNR	1	15
LNR	-	126
MPA	-	-
MCZ	1	3

D.2.2 Under the Natural Environment and Rural Communities (NERC) Act 2006, Northumbrian Water has a duty to have regard to the conservation of biodiversity in exercising its function. The duties relate to habitats and species of principal importance, some which may be designed Local Wildlife Sites (LWS).

D.2.3 Priority habitats make up 23% of the Northumbrian water region equating to a total of 210,380ha. Deciduous woodland accounts for the highest percentage of priority habitat in the region. The split of priority habitats by type across the region is shown in Table D.5 and Table D.6.

Table D.5: Priority habitats in the NW WRZ (Berwick – Fowberry)

Priority Habitat Type	Berwick – Fowberry Hectares (ha)
Coastal and floodplain grazing marsh	136.52
Coastal saltmarsh	34.85
Coastal sand dunes	152.55
Fragmented Heath	1.51
Deciduous woodland	830.13
Good quality semi-improved grassland	150.5
Lowland calcareous grassland	0.79
Lowland dry acid grassland	29.17
Lowland fens	24.34
Lowland heathland	38.73
Lowland meadows	16.34
Maritime cliff and slope	24.82
Mudflats	15.12
No main habitat but additional habitats present	186.4
Saline lagoons	0.06
Traditional orchard	3.14

Table D.6: Priority habitats in the NW WRZ (Kielder)

Priority Habitat Type	Kielder (ha)
Blanket bog	64947.79

Priority Habitat Type	Kielder (ha)
Calaminarian grassland	57.99
Coastal and floodplain grazing marsh	1054.97
Coastal saltmarsh	158.40
Coastal sand dunes	1052.68
Deciduous woodland	24950.31
Fragmented heath	2674.49
Good quality semi-improved grassland	5593.63
Grass moorland	21154.14
Lowland calcareous grassland	470.71
Lowland dry acid grassland	235.09
Lowland fens	564.81
Lowland heathland	2205.97
Lowland meadows	471.16
Lowland raised bog	247.69
Maritime cliff and slope	396.69
Mudflats	87.53
No main habitat but additional habitats present	10917.50
Purple moor grass and rush pastures	230.14
Reedbeds	26.13
Saline lagoons	19.43
Traditional orchard	40.93
Upland calcareous grassland	303.73
Upland flushes, fens and swamps	389.62
Upland hay meadow	871.06
Upland heathland	69612.81

D.2.4 There are approximately 2,000 invasive non-native species (INNS) in the UK, and approximately 10-15% of them cause significant social, environmental, or economic impacts, costing the UK an estimated £1.7 Billion a year.

D.2.5 Species of particular concern for Northumbrian Water highlighted in their biodiversity programme include:

- North American Signal crayfish (*Pacifastacus leniusculus*)
- Japanese Knotweed (*Fallopia japonica*)
- Himalayan Balsam (*Impatiens glandulifera*)
- Giant Hogweed (*Heracleum mantegazzianum*)

D.3 Water

D.3.1 The Northumbrian Water supply region is a relatively wet area in the UK, with the average annual rainfall exceeding 1500mm and is classed as an area with no serious water stress[2] . However, the anticipated population and economic growth alongside the projected changes in climate will likely continue to place additional stress on water availability and the natural environment within the Northumbrian Water supply region. The Northumbrian Water supply region also has a number of nationally and internationally important wetlands and other water-dependent habitats. Therefore, the management of water resources is particularly important.

D.3.2 The main rivers in the Northumbrian Water supply region are shown in Figure D.4. There is one main river basin district (RBD) within the Northumbrian Water supply region; Northumbria. All of the NW supply area falls within the Northumbria river basin district.

D.3.3 The Northumbria RBD covers an area of 9,000km2 and extends from the Scottish border in the north to Stockton-upon-Tees in the south and includes parts of Cumbria in the west and extends to the North Sea in the east.[3] The Northumbrian water supply area intersects seven of the management catchments in the Northumbria RBD.

D.3.4 The number of water bodies in the Northumbrian Water supply region within Northumbria RBD is presented in Table D.7

Table D.7: Number of water bodies in the Northumbrian Water supply region

Water body categories	Total
Rivers and surface water	315
Lake	45
Coastal	7
Estuarine	7
Groundwater	10
Total	**384**

D.3.5 The WFD indicator of the health of the water environment is whether a water body is at good status or potential. This is an assessment of a range of quality elements relating to the biology and chemical quality of surface waters and quantitative and chemical quality of groundwater. To achieve good ecological status or potential, good chemical status or good groundwater status every single element assessed must be at good status or better. If one element is marginally below its threshold for good status, then the whole water body's status is classed as less than good. Table D.8 and Table D.9 summarise the current status of surface and groundwater water bodies in the Northumbrian Water supply region within the main RBD[4].

Table D.8: 2015 classification for surface water bodies in the Northumbrian Water supply region

River basin district	Quantitative status					Chemical Status	
	Bad	Poor	Moderate	Good	High	Fail	Good
Northumbria RBD	13	62	199	98	2	29	345

[2] Environment Agency (2021). Water Stressed Areas – Final Classification 2021. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/998237/Water_stressed_areas___final_classification_2021.odt

[3] Defra and Environment Agency (2021). "Northumbria River Basin District". Available at Northumbria River Basin District | Catchment Data Explorer

[4] It should be noted that 'coastal' waterbodies outlined within Table D.7 within the Northumbrian Water supply region are not included within Table D.8 and Table D.9, as WFD classifications for these water bodies were not available considering they are not part of a river water body catchment,

Table D.9: WFD quantitative and chemical 2015 classification for groundwater water bodies in the Northumbrian Water supply region.

River basin district	Quantitative status		Chemical status	
	Poor	Good	Poor	Good
Northumbria RBD	1	9	7	3

D.3.6 The RBMP for the Northumbria RBD highlights significant water management issues which prevent the sustainable management of water within the entirety of the river basin, as presented in Table D.10. Within the Northumbria RBD, change to the natural flow and level of water, pollution from rural areas, pollution from abandoned mines, pollution from wastewater and pollution from towns, cities, and transport, as well as physical modifications, affect the highest proportions of water bodies.

Table D.10: Water management issues

Water Management Issue	Northumbria RBD
Physical modifications	38%
Pollution from wastewater	13%
Pollution from rural areas	10%
Pollution from abandoned mines	9%
Pollution from towns, cities, and transport	4%
Change to the natural flow and level of water	2%
Non-native invasive species	<1%

Flood risk

D.3.7 Within the Northumbrian water region, the risk of flooding comes from a variety of sources which include coastal waters, surface water, groundwater, storms, and reservoirs. The projected changes in climate are presented in D.6. Climatic factors are likely to increase the frequency of extreme weather events, which combined with projected increases in coastal erosion rates and a rise in sea level will further impact flood risk across the region, with nearly 46% of the surface waters in the Northumbria RBD predicted to deteriorate by 2027.

D.3.8 The Northumbria RBD has over 2.78 million residents, with over 6,000 residents who are at high risk of flooding from rivers and the sea and over 13,000 also at risk from surface water flooding. There are no significant flood risk areas identified in the Northumbria RBD during the Preliminary Flood Risk Assessment process.

Covid-19 Impacts on Water Demand

D.3.9 The research and data that has been collated for this report all indicate that demand and PCC have been impacted be the effect of the Covid-19 pandemic. Namely that household demand has increased, and non-household demand has decreased, with overall total demand increasing. It is encouraging that figures from multiple sources are similar and by combining all the data that have investigated the effect of Covid-19 alone on demand (excluding weather) the impact can be summarised as:

- Total Demand: A 2-5% increase of total demand (excluding weather) with times of peak demands increasing by 20-40% (this includes weather).
- PCC: A 3-15% increase in average PCC (excluding weather); with times of peak demand increasing by around 20-40% (this includes weather).
- Non household demand: A decrease of 25-50%.

- Using more water at home: This ranges between a 15-55% increases in water use in the home as perceived by customers. This tallies up to what was actually seen from the demand data.
- Working from home: Pre-Covid 5-15% of customers were working from home and during 2020 this has increased to 20-45%.

D.3.10 The impact of the Covid-19 pandemic will continue to affect PCC and Demand in the next few years and could potentially cause permanent changes to demand and PCC henceforward. From modelled data the PCC increase is estimated to reduce to between 2-3% by 2025 compared to an estimated 4-5% for 2021/22. These estimates give an idea of how consumption will vary for the remainder of the AMP regarding the effect of Covid-19.

D.3.11 Northumbrian Water's long-term goal is to reach a PCC of 118 litres per person per day by 2040. Pre-covid, the average NW PCC for 2019/20 was recorded as 140.26. Current reported average NW PCC (2020/21) is 157.07 as shown in Table D.11.

Table D.11: Average PCC Kielder and Berwick pre-Covid

Average PPC	2019/2020	2020/2021
Kielder	144.49	162.47
Berwick	136.04	151.67

D.4 Soil

D.4.1 The WReN region is a hub for agriculture with cereal and livestock grazing being the predominant type of farming. Agricultural land is classified on a scale of 1 to 5 where 1 is the highest quality and 5 is the lowest. The agricultural land classification of the region is predominately Grade 3 followed by Grade 5, with pockets of urban and non-agricultural land as shown in Figure D.4.

D.4.2 The North East of England has a significant number of landfill sites. Currently, there are approximately 96 authorised landfill sites across the Northumbrian Water region.

D.5 Air

D.5.1 Air quality in the Northumbrian water region is varied and there are certain areas with higher concentrations of air pollutants likely to be associated with urbanisation, transport, or business activities. Air Quality Management Areas (AQMAs) are declared where the national air quality objectives are not being met[5]. A high proportion of the local authorities which fall within the Northumbrian Water supply region contain at least one AQMA and are predominately designated for Nitrogen dioxide (NO2) and Particulate Matter (PM10)[6]. There are a total of seven AQMAs in the Northumbrian supply area.

D.6 Climatic Factors

D.6.1 Current observations indicate that the UK is continuing to warm. In 2021, temperature records were set, including a high of 28.6°C and a new winter record of -23.0°C[7]. The decade between 2010 and 2020 has been on average 0.3°C warmer than the 1981-2010 average and 0.9°C warmer than 1961-1990. Annual precipitation has increased across the UK in the last few

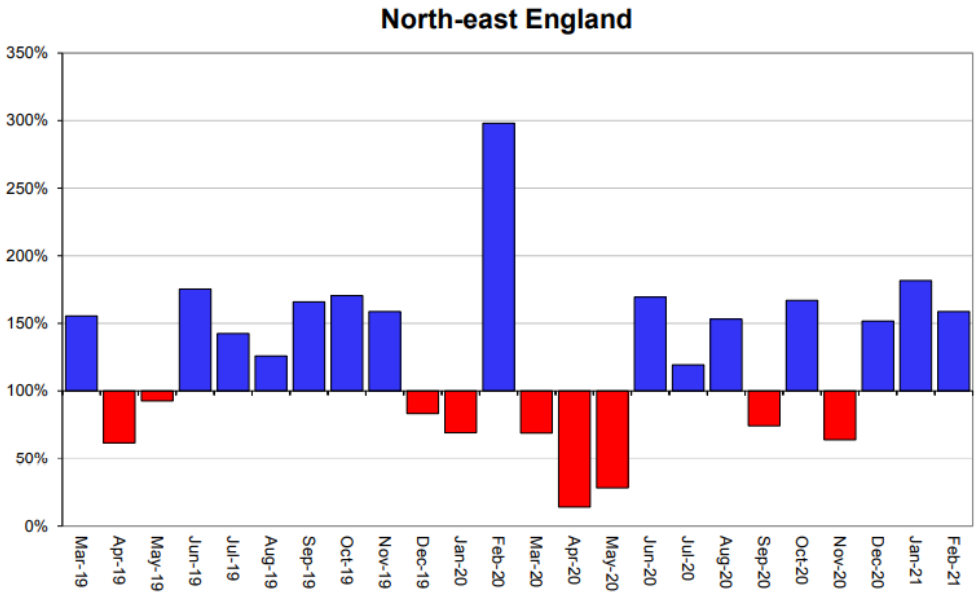
[5] Defra National Air Quality Objectives. Available at: https://uk-air.defra.gov.uk/assets/documents/National_air_quality_objectives.pdf

[6] Defra List of Local Authorities with AQMAs. Available at: https://uk-air.defra.gov.uk/aqma/list

[7] RMetS (2021). State of the UK Climate. Available at: State of the UK Climate - Met Office

decades with 2020 seeing 116% more rainfall than the 1981-2010 average. Figure D.2 below provides rainfall information for the North East region from March 2019 to February 2021 (the red bars indicative of below average rainfall and the blue bars indicative of above average rainfall). February 2020 stood out to be an extensively wet winter month, setting an annual record.

Figure D.2: North East region Monthly Rainfall Chart (2019-2021)[8]



D.6.2 The Met Office UK Climate Projections (UKCP) were updated for the first time since 2009 in December 2018 (UKCP18)[9] . The UKCP18 are largely the same as the previous projections where all areas of the UK are projected to be warmer, particularly during summer months. Rainfall is projected to vary seasonally and at a regional scale, however the UK is projected to have wetter winters and drier summers. The projected changes in temperature and precipitation for the north east of England by the 2050s (2040-2069), under the RCP8.5 scenario (high emissions scenario) are detailed in Table D.12**.** The 1981-2010 baseline period and the central estimate, representing 'as likely as not' probability of change (50th percentile), was used for the following projections.

Table D.12: Climate projections by the 2050s under the RCP8.5 scenario

Climatic Factor	Climate Projections
Temperature	Annual mean temperatures are projected to increase by 3.5°C. Summer temperatures are projected to see the largest increase by 2.8°C and winter temperatures by 1°C. Mean maximum summer temperatures are projected to increase by 3°C.
Precipitation	Annual mean precipitation is projected to decrease by 10%. Seasonal variability is projected with a 20% decrease in precipitation during summer months and an increase of 20% during winter months.

Source: Met Office UKCP18 using the central probability estimate for a RCP8.5 scenario

[8] Water Situation Report: Available at: https://www.gov.uk/government/collections/water-situation-reports-for-england

[9] Met Office UKCP18. Available at: https://www.metoffice.gov.uk/research/approach/collaboration/ukcp

Greenhouse gas emissions

D.6.3 Based on information from the local authorities which fall within the WReN region, the total carbon dioxide (CO2) emissions for 2019 across all sectors is estimated at 14,750.2 kilo tonnes (ktCO2).

D.6.4 The industry sector contributed the highest proportion of emissions to the total in 2019 at 38.8% followed by the transport and domestic sector at 30.7% and 26.6% respectively. The LULUCF sector is estimated to be responsible for the removal of 1,189.5ktCO2 equating to an 8.1% reduction in the total CO2 emissions[10]

D.7 Population and Human Health

D.7.1 It should be noted that data on population and human health is presented differently by each Authority.

Northumberland

D.7.2 The total population as determined by Northumberland County Council local authority is 319,030 (2017). The Office of National Statistics population projections (2016 based) predict that by 2033 the total population will increase by another 18,970 people to a total of 338,000, an increase of 8.3% from 2017 estimates as shown in Table D.13. Over the next 25 years an increase of 3,680 new homes occupied each year is predicted.

Table D.13: Population projections all ages 2017 – 2034 Northumberland

Total population (all ages)	2017	2034
Numbers	319,030	338,00

Source: ONS Data

D.7.3 It is estimated that 16.3% of the population are aged 0-15 years (Children & Young People), 59.7% of the population are aged 16-64 (working age group) and 23.9% are aged 65 and over. Compared to the average for England, the Working Age group is 1.23% lower than the national average, whilst the 65+ age group is 5.42% higher.

D.7.4 The general Northumberland populational health in comparison to the populational health of the North East of England, and of England as a whole, is presented in Table D.14 below.

Table D.14: General Health (2011) Northumberland

Category	Northumberland	England
	%	%
Very bad health	2	1.2
Bad health	4.3	4.2
Fair health	15	13.1
Good health	38.3	34.2
Very good health	39.7	47.2

Source: Northumberland County Council

[10] DECC (2021) Local Authority Carbon Dioxide Emissions Estimates 2019: Statistical Release

North East England

D.7.5 Settlements within the North East region of England are diverse and range from large population centres such as Newcastle, Sunderland and Durham to small rural hamlets and seaside towns.

D.7.6 The distribution of age amongst the population in the region is similar to the UK average where 17.6% are aged 15 and under, 62.3% are between 16 and 64, and 20.1% are over 65. The average age is 41.6 years old, and the region has a total population of 2.4M residents.

D.7.7 Ethnicity in the region is predominately White British. There are much smaller proportions of Black, Asian, and Mixed ethnicities in the urban areas of the region compared to rural areas.

D.7.8 Life expectancy at birth for both males and females in North East England is lower than the England average at around 77.9 years old and 81.6 years old respectively. Alongside the various indicators included within the Public Health Profiles, the region is generally worse than the national average. Where the region is performing worse than the national average is against the following indicators:

- Killed and seriously injured causalities on England's roads
- Suicide rate
- Hip fractures in people aged 65 and over
- Estimated diabetes diagnosis rate
- Smoking prevalence in adults (18+)
- Percentage of physically active adults,
- Smoking prevalence in adults in routine and manual occupations (18-64)
- Excess winter deaths.

Economy

D.7.9 North East England contributes around 6.7% of the total UK economy. Gross Domestic Product (GDP) per head is £24,068 which is lower than the national UK average of £32,857. The production industry dominates the employment sector across the North East region, which is in line with the rest of the UK. For the three months ending September 2021 the unemployment rate was 5.9% which is slightly higher than the UK average of 5.6%.

D.7.10 In 2019, there were 2.6 million trips to North East England, which makes up around 5% of total trips to England. The total expenditure in Eastern England was £759 million.

Regional deprivation

D.7.11 The Index of Multiple Deprivation (IMD) 2019 is the official measure of relative deprivation for small areas (or neighbourhoods) in England. The IMD ranks every small area (Lower Super Output Area) in England from 1 (most deprived) to 32,844 (least deprived). For larger areas we can look at the proportion of LSOAs within the area that lie within each decile. Decile 1 represents the most deprived 10% of LSOAs in England while decile 10 shows the least deprived 10% of LSOAs. According to the Northumberland County Council,8% of the county population live in areas within the 10% most deprived decile of the IMD 2019.

D.8 Historic Environment

D.8.1 The Northumbrian water region is rich in heritage, with listed buildings, scheduled monuments, registered parks and gardens and registered battlefields. The total number of each of these assets within the Northumbrian Water Supply region is presented in Table D.15**.** Scheduled monuments, registered parks and gardens, and registered battlefield are shown on Figure D.7.

The WReN region is rich in heritage with listed buildings, scheduled monuments, conservation areas, registered parks and gardens, and registered battlefields.

Table D.15: Heritage assets within the WReN region

Asset	Description	Berwick-Fowberry		Kielder
Listed Buildings	The statutory responsibility for listed buildings control lies with the individual Local Authorities. The Department for Digital, Culture, Media and Sport is responsible for compiling the statutory list of buildings of special architectural or historic interest and each building or structure of interest is classified under one of three Grades; I, II* and II depending on their significance (Grade I assessed as highest significance).	Grade I	28	305
		Grade II*	38	695
		Grade II	645	10240
Registered Parks and Gardens	Historic England maintains a register of historic parks and gardens of special interest in England, these parks and gardens are as equally important as buildings and settlements and form part of an area's cultural heritage. However, unlike listed buildings and conservation areas, historical parks and gardens are not afforded legal protection within the UK. The registration of these historic parks and gardens is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the landscapes' special character.	Grade I	-	4
		Grade II*	1	10
		Grade II	-	40
Scheduled Monuments	Scheduled monuments are protected under the Ancient Monuments and Archaeological Areas Act 1979. The monuments are scheduled and recorded through Historic England, based on national importance and covering a diverse range of archaeological sites. Scheduled monuments are often in a ruinous or semi-ruinous condition or take on the form of earthworks. More complete structures of national significance are usually protected as listed buildings.		73	1447
Conservation Areas	Conservation areas are designated by local planning authorities under their powers. The areas are protected to preserve special areas of historical and architectural importance and can range from small villages, town centres and residential areas. Each conservation area will have its own conservation area appraisal, which sets out how it should be protected.		6	257
Registered Battlefields	Historic England holds a Register of Historic Battlefields. Its purpose is to offer battlefields protection through the planning system, and to promote a better understanding of their significance and public enjoyment.		3	5

D.8.2 It is likely that most of the Local Authorities in the WReN region will hold a Historic Environment Record (HER), which is a database of archaeological sites, listed buildings and other historic buildings, and finds of historic objects. There are hundreds of entries on the HERs from churches and houses to roman coin finds and medieval finds. There is also potential for unidentified heritage assets and archaeological remains to be present within the region.

D.9 Landscape

D.9.1 The landscape across the Northumbrian Water region is diverse; it is low and flat near the North Sea coast and increasingly mountainous toward the northwest. The region also has a striking stretch of coastline, including sandy beaches, sand dunes, rugged cliffs and isolated islands, and picturesque seaside villages.

D.9.2 National Character Areas (NCAs) divide England's landscape into 159 distinct areas and are defined by a unique combination of aspects such as landscape, biodiversity, geodiversity and economic activity[11]. There are 17 NCAs within the Northumbrian Water WRZ.

D.9.3 Areas of Outstanding Natural Beauty (AONB) are protected to conserve and enhance their natural beauty and distinctiveness[12]. There are two AONB within the Northumbrian Water WRZ which are detailed in Table D.16 and are shown on Figure D.6.

Table D.16: AONB within the Northumbrian Water Region

AONB	Description
Northumberland Coast	Covering 40 miles (64 km) of coastline from Berwick-Upon-Tweed to the River Coquet estuary in the Northeast of England, includes sandy beaches, sand dunes, rugged cliffs and isolated islands. It includes two National Nature Reserves.
North Pennines	The North Pennines is the northernmost section of the Pennine range of hills, the AONB is also a UNESCO Global Geopark. The landscape of the North Pennines AONB is made up of heather moors, deep dales, upland rivers, hay meadows and stone-built villages. 36% of the AONB designated as Sites of Special Scientific Interest.

Tranquillity

D.9.4 Tranquillity is recognised as a natural resource and one which is beneficial to health and wellbeing, however infrastructure and development is putting more pressure on this special quality. The Campaign for Rural England (CPRE) has developed a tranquillity map for England to show the range of undisturbed or disturbed tranquillity areas across the country. There are areas of high tranquillity (undisturbed areas) distributed throughout Northern England, as well as pockets of urban areas.

D.10 Material assets

D.10.1 The Northumbrian Water supply region has an extensive transport network which connects people, places and services both within the region and beyond to support the regional and national economy.

D.10.2 In the wider WReN region the A1(M) runs north-south through the region whilst a number of key A roads (A1, A58, A69, A696, and the A19) cross the region, mostly travelling outwards from Newcastle upon Tyne. These main trunk routes are maintained by Highways England. A variety of other major roads run through the region, maintained by county council.

[11] Natural England (2014). NCAs. Available at: https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making

[12] Natural England (AONBs): designation and management. Available at: https://www.gov.uk/guidance/areas-of-outstanding-natural-beauty-aonbs-designation-and-management

Resource Use and Waste

D.10.3 In 2020/21 the total amount of local authority managed waste was 25.9 million tonnes. North East England managed 1.3 million tonnes of waste in 2020/21, with 33.8% of this collected waste sent for recycling, 56.4% sent to incineration, 7.9% sent to landfill and the remaining 2.0% fell within the 'other' category. The recycling rate for North East England was the second lowest in England, with only London (29.9%) performing worse.

D.11 Natural Capital

D.11.1 The Northumbrian Water WRZ contains a diverse range of Natural Capital stocks that provide a range of ecosystem services at the national, regional and local levels. The landscape is a mixture of coastal area, lowlands and small hills that contain all eight broad habitat types included within the United Kingdom's National Ecosystem Assessment (UK NEA). The UK NEA reports, first published in 2011 with follow-on reports published in 2014, set out the direct relationships between healthy, functioning ecosystems and human well-being and economic prosperity. The findings, which included extensive research from hundreds of natural scientists, economists, social scientists and other stakeholders, explained that many of the UK's ecosystems are in a state of decline, and that it is critically important for decision-making processes to recognise the benefits that society receives from those ecosystems. Anthropogenic pressures, such as agricultural intensification and population growth, threaten the functioning of those ecosystems, with the report citing a significant decline in the UK's semi-natural grasslands in the last 60 years due to agriculture, as well as a similar decline in coastal margin habitats due to development and coastal squeeze. It is an imperative for the WReN assessment process to recognise the current state and benefits derived from its ecosystems. It is also important to recognise that the Northumbrian water region contains several key abiotic stocks including fertile soils and coastal shelves, which also directly benefit society.

D.11.2 The land cover percentages for Natural Capital stocks within the Northumbrian Water region have been estimated using open source data and are provided below. Estimates for coastal and marine land cover were not available, however these habitats will be included in the Natural Capital baseline for the options assessments and wider IEA process.

Soils and geology

D.11.3 Information on soils stocks within the Northumbrian water WRZ is described in Section D.4 and shown on Figure D.4. The region contains nationally important stocks of soils.

Freshwater

D.11.4 A figure for freshwater natural capital stocks in the Northumbrian Water WRZ is not available at time of writing. This natural capital stock encompasses all waterbodies and wetlands such as rivers, ponds, fens, marshes and bogs. Within the WRZ artificial freshwater habitats, such as canals and reservoirs are also an important natural capital stock. These natural capital stocks are vital to support the region's biodiversity and provide other ecosystem services such as water supply, climate regulation and cultural services

Farmland

D.11.5 Farmland natural capital stocks cover approximately 47% of the Northumbrian water region, agriculture with cereal and livestock grazing being the most predominant type of farming. Examples of types of Farmland stocks include Arable and rotational leys, Horticulture, Improved grassland, Orchards and top fruit and Permanent pasture. In addition to the primary production of agricultural products, farmland provides many other services such as supporting biodiversity and providing cultural and heritage services.

Grasslands

D.11.6 Grassland natural capital stocks cover approximately 11% of the Northumbrian Water region and include predominately semi natural grasslands. These habitats provide key services supporting biodiversity, sequestering carbon and mitigating climate change and livestock production. In addition, this stock is associated with recreation and physical benefits.

Urban

D.11.7 Urban natural capital stocks cover approximately 4% of the Northumbrian Water region and include greenspace, blue space and mosaic habitats within urban areas. These natural capital stocks provide a wide range of ecosystem services supporting a diverse array of plants and animals and can be particularly important for pollination services. Amenity greenspaces (parks, outdoor sports facilities) are vital for community cohesion, and the mental and physical health of urban residents.

Woodland

D.11.8 Woodland natural capital stocks cover approximately 9% of the Northumbrian Water region and consist of several sub habitat types including Broadleaved, mixed and yew woodland, Coniferous woodland, Individual trees/veteran trees and Woodland priority habitats. The quality of woodland stocks vary within the region as the majority is under management however several high-quality stocks include ancient woodland. These stocks provide services such as carbon sequestration, air purification and flood prevention.

Coastal and marine

D.11.9 Coastal and marine habitats cover a small proportion of the land cover within the Northumbrian Water region however include several key habitats and natural capital stocks such as:

- Beach
- Salt marsh
- Sand dunes
- Intertidal rock
- Intertidal sediment
- Reefs
- Sea grass beds
- Shallow subtidal sediment.

D.11.10 These stocks support a range of services including reaction, cultural service, hazard prevention and climate regulation.

Future baseline

- The SEA Regulations requires that "the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the Plan or Programme" is identified. Prediction of future trends is difficult because they depend on a wide range of global, national and regional factors and decision making. Key trends have been identified and from an initial review it is likely that the following trends of aspects influencing change will continue:
- Climatic factors - the climate is expected to continue to change with annual average temperatures projected to increase, particularly in summer. Winters are projected to be wetter and summers drier. Carbon and other GHG emissions will continue to be emitted, however regulations and legislation will likely continue to promote the reduction in emissions

through commitments to net zero. The water industry in the UK is aiming to become net zero by 2030.

- Material assets - regeneration and future investment and demand are likely to increase the number and quality of material assets such as housing, transport infrastructure, waste facilities, and community facilities.

D.12 Key issues for the WReN Regional Plan:

- Biodiversity, flora and fauna – There is a need to protect or enhance the region's biodiversity, particularly protected sites designated for nature conservation and to avoid activities likely to cause irreversible damage to natural heritage. There is the need to develop opportunities to improve connectivity between fragmented habitats and to control the spread of Invasive Non- Native Species (INNS). There should be more engagement of people in biodiversity issues so that they personally value biodiversity including through recognising the value of ecosystem services.
- Population and human health - water resources play an important role in supporting the health and recreational needs of local communities. It is necessary to ensure all communities have a clean, safe and attractive environment in which people can take pride. Also, to ensure secure, safe, reliable, sustainable and affordable supplies of water are provided. It is recognised that access to high quality open spaces and opportunities for sport and recreation can make an important contribution to the health and wellbeing of communities.
- Soil – Protect and enhance the quality of soils. Encourage the development of brownfield sites and promote mixed use development.
- Water - Encourage more efficient use of water and promote awareness of water sustainability. Develop a resilient and flexible water management approach to cope with a changing climate, population, and economic conditions. Water quality is likely to continue to be maintained and improved through legislation such as the WFD. There is potential for an increased need for wastewater treatments in combination due to WFD water quality standards and population increase. Given the energy intensity of wastewater treatment, the water industry CO_2 emissions may increase and further contribute to climate change. There is a need to reduce flood risk to people both residential and non-residential properties, community facilities and key transport links, as well as designated nature conservation sites and heritage.

D.13 Wider issues

D.13.1 Air quality and Climate – There is a critical need to reduce greenhouse gas emissions and to put UK on the path to net zero 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 and improve overall air quality.
- Minimise energy consumption and 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.

D.13.2 Historic environment - Historic England recently reported that heritage assets at risk are decreasing. There is a need to conserve or enhance sites and the settings of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment.

D.14 Baseline Maps

Figure D.1 – Special Protection Areas and Special Areas of Conservation

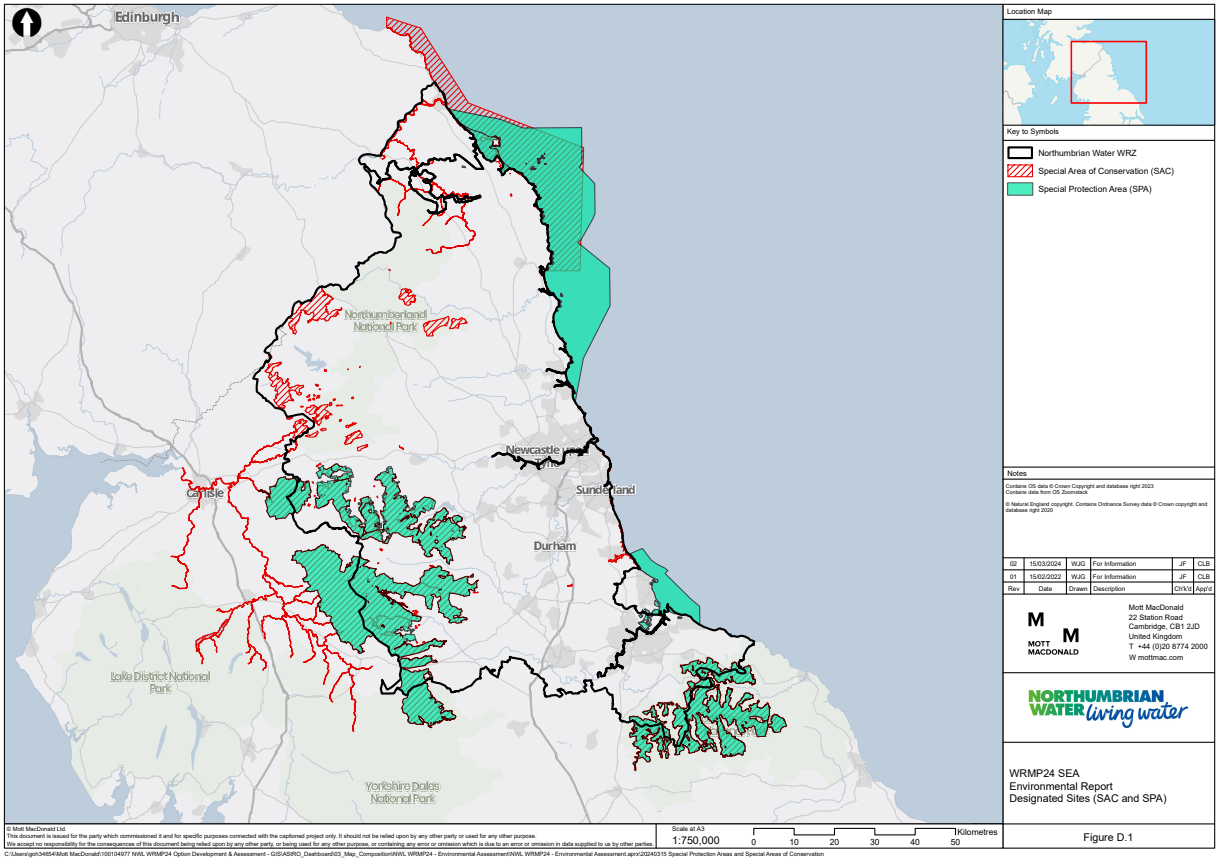


Figure D.2 – Ramsar and Sites of Special Scientific Interest

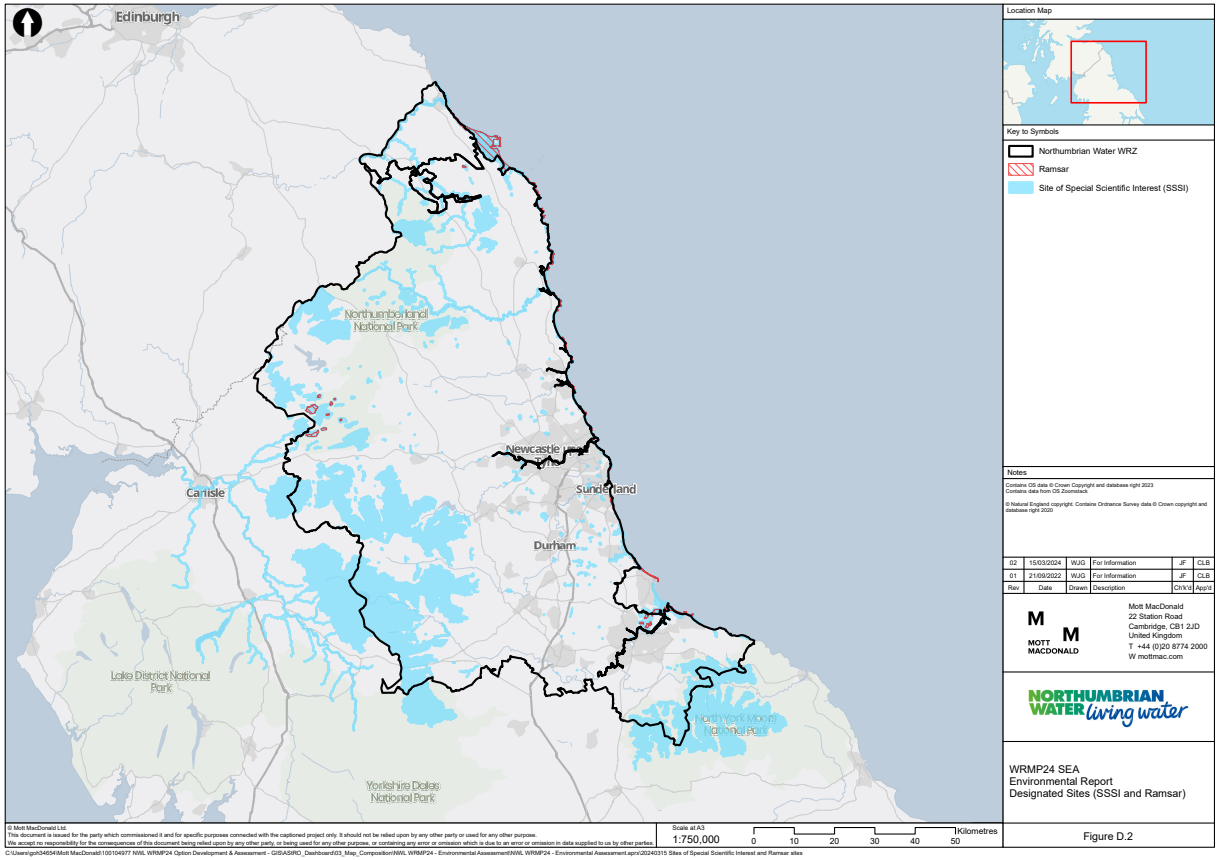


Figure D.3 – National Nature Reserves and Local Nature Reserves

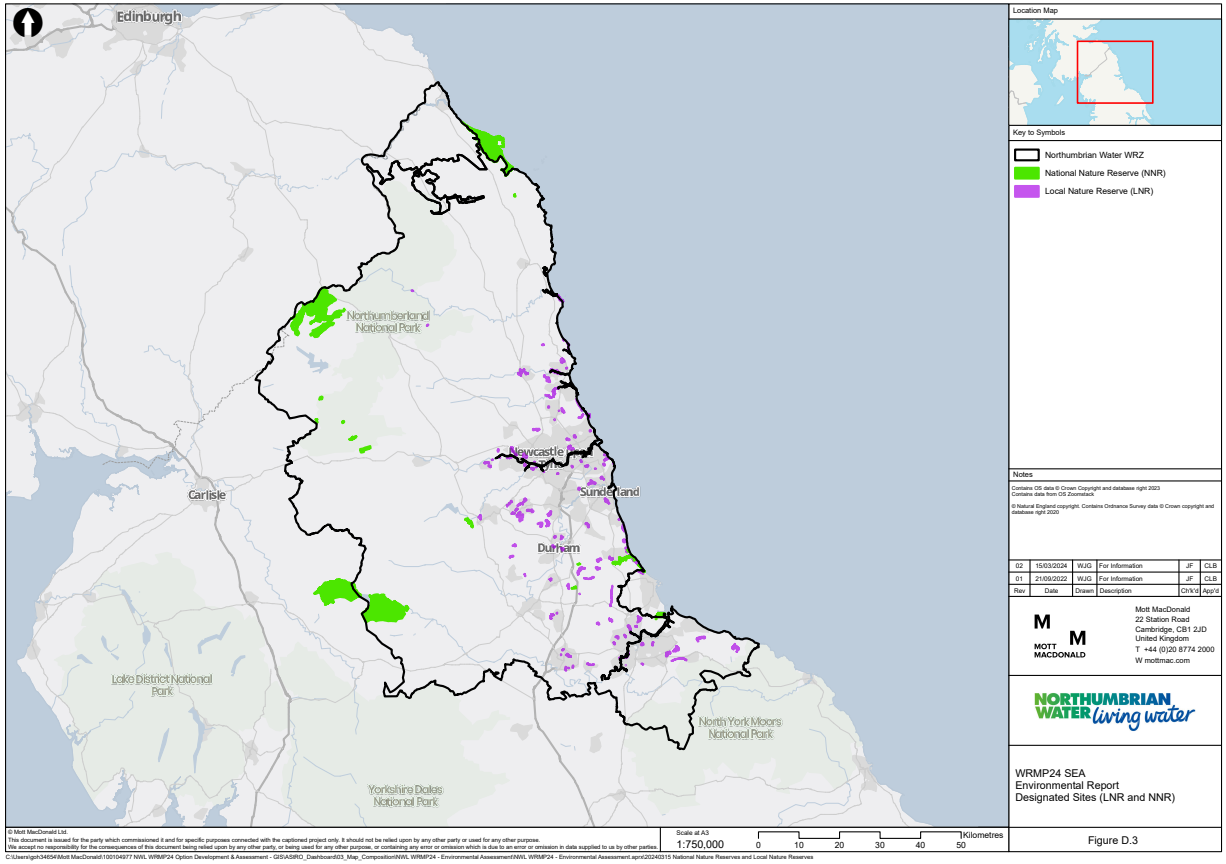


Figure D.4 – Main Rivers and Agricultural Land Classifications

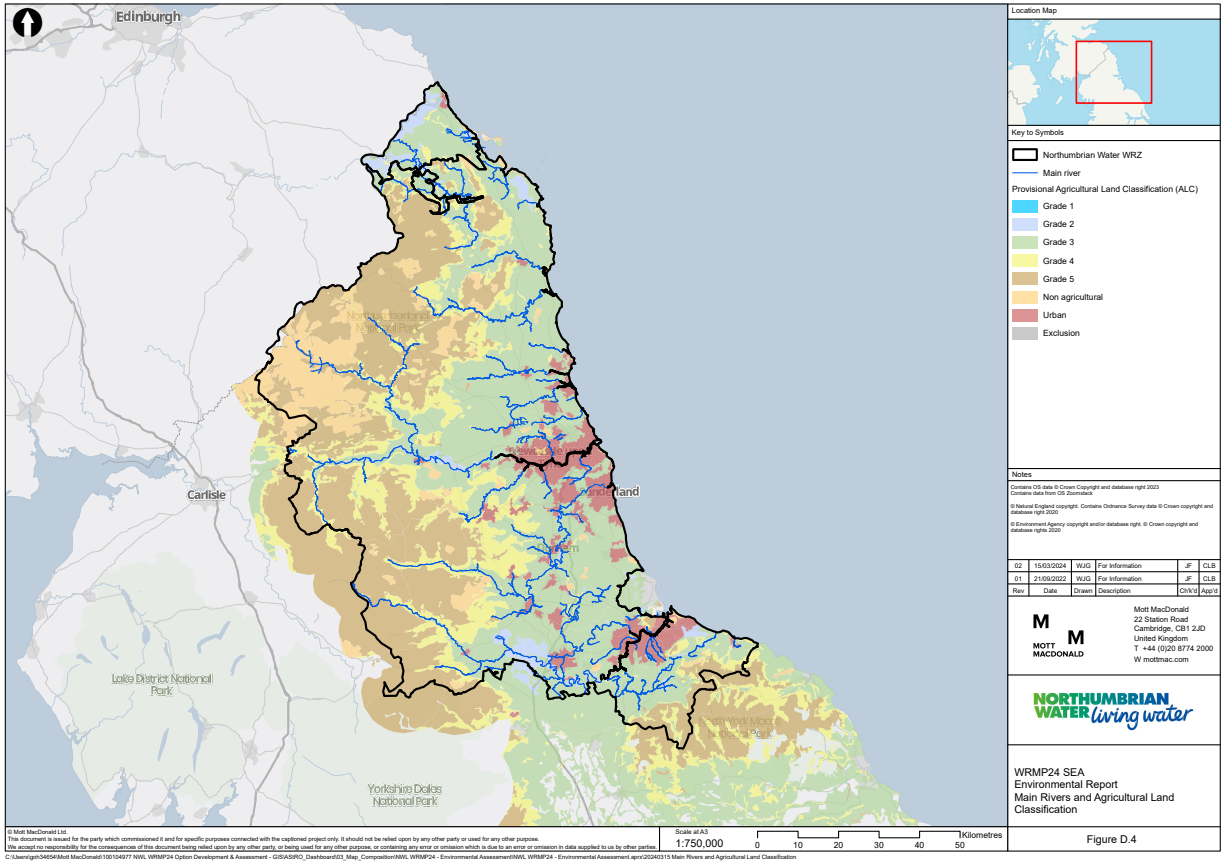


Figure D.5 – Surface Water Catchments

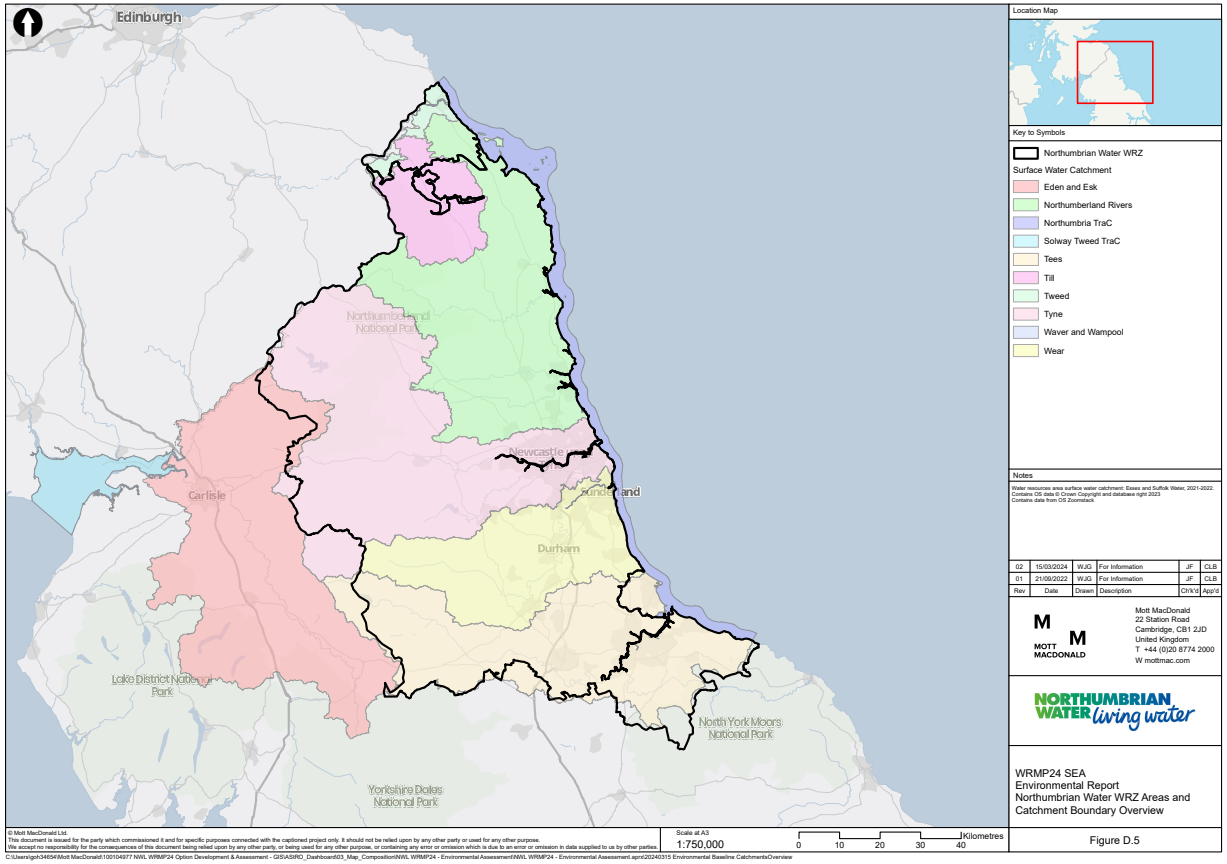


Figure D.6 – Areas of Outstanding Natural Beauty

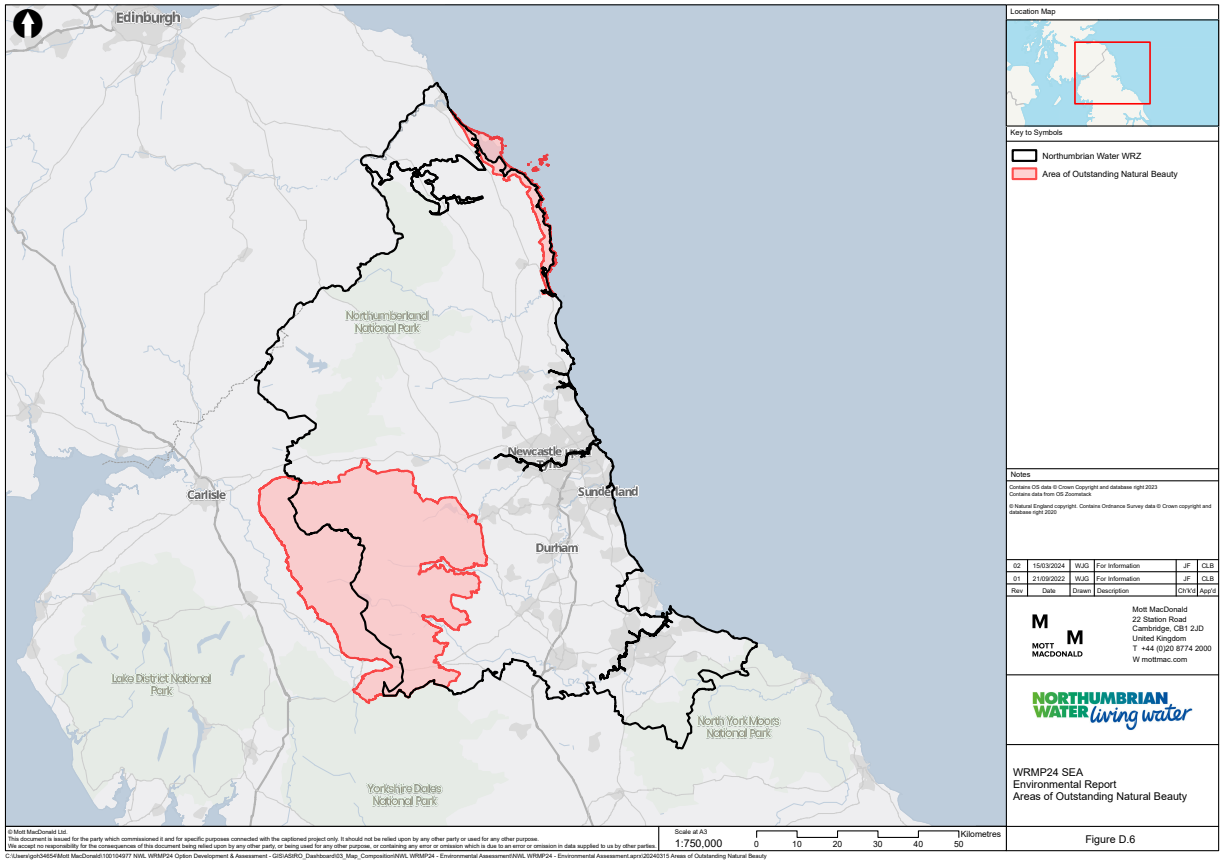
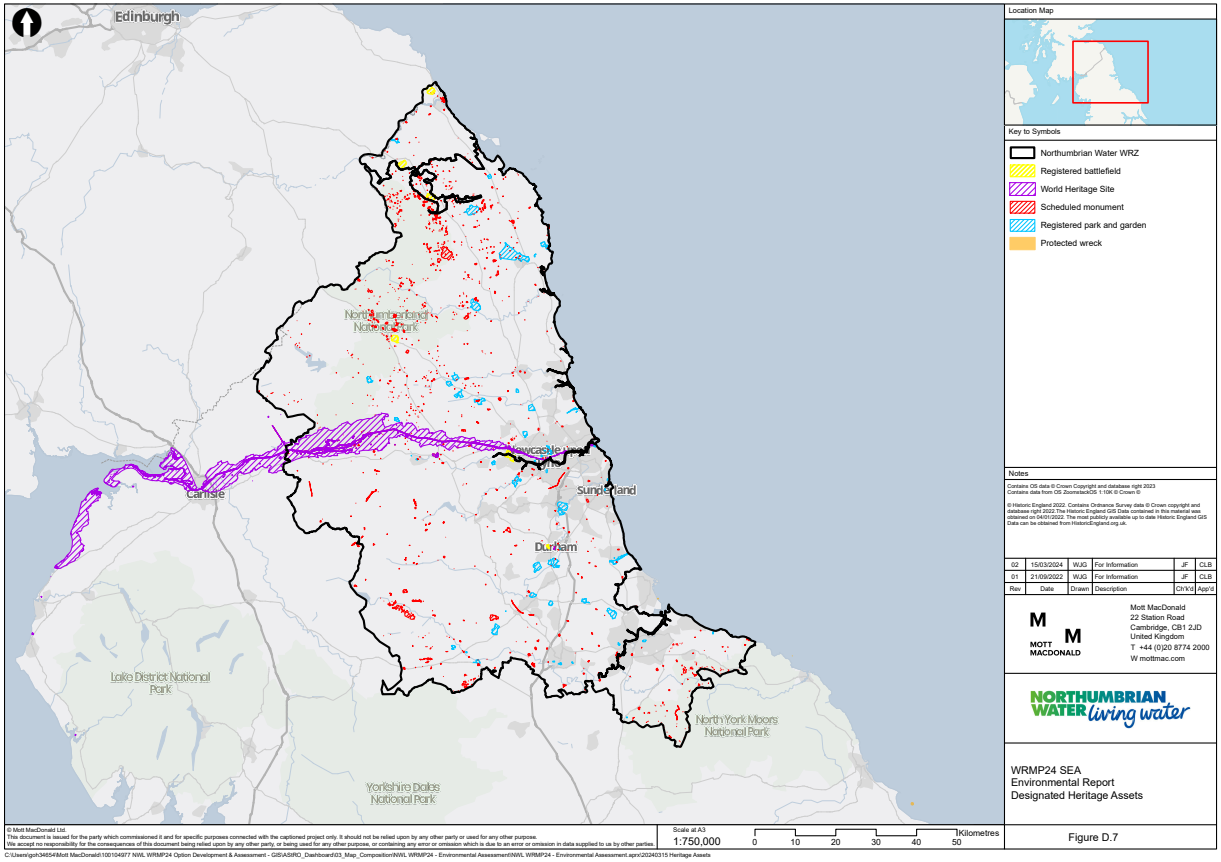


Figure D.7 – Heritage Sites



E. Integrated Environmental Assessment Summary Sheets

F. Habitat Regulations Assessment Appendix

G. Water Framework Directive Appendix

H. Biodiversity Net Gain and Natural Capital Approach

I. Invasive Non-Native Species Index

J. High Level Screening Appendix

K. Strategic Environmental Assessment Matrix Appendix

Northumbrian Water SEA Assessment Matrices are available on request