



WRSE Regional Plan

Strategic Environmental Assessment Scoping Report

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	04/09/20	S Robinson B O’Hickey T Starling	N Levy J Fookes S Allen	S Watson	Draft for Client Comment
B	18/09/20	S Robinson B O’Hickey N Levy	J Fookes	S Watson	For Consultation

Document reference: 412624-ENV-306

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

1	Introduction	8
1.1	Introduction	8
1.2	The SEA process	9
1.3	Purpose of the scoping stage and report	10
1.4	Limitations of the Scoping Report	11
2	Description and Context of the WRSE Regional Plan	12
2.1	Background and purpose	12
2.2	Description of the WRSE regional plan	12
2.3	The WRSE Environmental Destination	13
3	Relationships with other Policies, Plans and Programmes	15
3.1	Policies, plans and programmes review	15
3.2	Identification of key themes and messages	16
4	Environmental Baseline	22
4.1	Introduction	22
4.2	Baseline information	22
4.3	Future baseline	37
5	Key Environmental Issues and Opportunities	39
5.1	Key issues and environmental opportunities	39
6	SEA Framework	44
6.1	SEA objectives and assessment criteria	44
6.2	Compatibility of SEA objectives	49
6.3	Compatibility of SEA objectives with WRSE regional plan objectives	51
7	Proposed Environmental Assessment Methodology	54
7.1	Introduction	54
7.2	High-level screening	55
7.3	Detailed assessment	59
7.4	Programme appraisal	60
7.5	Effects outside the WRSE boundary	60
7.6	Influencing the development of the WRSE regional plan	61
7.7	Relationship between the WRSE regional plan and WRMP24	61

8	Consultation and Next Steps	63
8.1	SEA scoping consultation	63
8.2	Next steps	63
9	References	65
A.	SEA Process Tasks	69
B.	Policies, Plans and Programmes Review	71
C.	Baseline Maps	94
D.	List of Local Authorities in WRSE Region	102
E.	Assessment Scoring Criteria	104
F.	Habitats Regulations Assessment Method Statement	116
F.1	Guidance	116
F.2	Stage 1: Test of Likely Significance (LSE)	116
F.3	Stage 1.5: Scoping the Appropriate Assessment	121
F.4	Stage 2: Appropriate Assessment	122
F.5	Stage 3: Consideration of alternatives	124
F.6	Stage 4: Imperative reasons of overriding public interest	124

Abbreviations

AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Areas
BAP	Biodiversity Action Plan
BNG	Biodiversity Net Gain
CAMS	Catchment Abstraction Management Strategy
CCRA	Climate Change Risk Assessment
CFMP	Catchment Flood Management Plans
CPRE	Campaign for Rural England
CROW	Countryside and Rights of Way
CO₂	Carbon Dioxide
DCLG	Department for Communities and Local Government
Defra	Department for Environment, Food and Rural Affairs
EAAP	Ecosystems Approach Action Plan
EU	European Union
FRA	Flood Risk Area
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIS	Geographic Information System
HER	Historic Environment Record
HRA	Habitats Regulations Assessment
IMD	Index of Multiple Deprivation
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
km	Kilometres
ktCO₂	Kilo Tonnes of Carbon Dioxide
LNR	Local Nature Reserve
LSOA	Lower Super Output Area

LWS	Local Wildlife Sites
LULUCF	Land Use, Land-use Change, and Forestry
MCZ	Marine Conservation Zone
MPZ	Marine Protection Zone
NCA	National Character Area
NERC	Natural Environment and Rural Communities
NNR	National Nature Reserve
NO₂	Nitrogen Dioxide
NPPF	National Planning Policy Framework
ONS	Office for National Statistics
PM	Particulate Matter
RAG	Red-Amber-Green
RCP	Representative Concentration Pathway
RBMP	River Basin Management Plan
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SES Water	Sutton & East Surrey Water
SMP	Shoreline Management Plans
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
SRO	Strategic Resource Option
SPA	Special Protection Area
UK	United Kingdom
UKCP18	UK Climate Projections 2018
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
WFD	Water Framework Directive
WRMP	Water Resource Management Plan
WRZ	Water Resource Zone

WRSE

Water Resources South East

1 Introduction

1.1 Introduction

Water Resources South East (WRSE) is made up of an alliance of the six water companies that cover the South East region of England, these are:

- Affinity Water
- Portsmouth Water
- SES Water (Sutton & East Surrey)
- Southern Water
- South East Water
- Thames Water

WRSE's aim is to secure the water supply for future generations through a collaborative, regional approach to managing water resources. To meet this aim WRSE is producing a multi-sector, regional resilience plan in order to secure reliable and resilient water supplies for the south east of England. The WRSE regional plan will take a long-term view to 2100 and will also provide a consistent framework for the development of the member water companies Water Resources Management Plans (WRMP) 2024.

To support the development of the regional plan an environmental assessment process is being undertaken that includes:

- Strategic Environmental Assessment (SEA)
- Habitats Regulations Assessment (HRA)
- Water Framework Directive (WFD) Assessment
- Biodiversity Net Gain (BNG) Assessment
- Natural Capital Assessment
- Invasive Non-Native Species (INNS) risk assessment

This report is the SEA Scoping Report and therefore, focusses primarily on the context, baseline, and scope for the SEA process.

The regional plan is not a statutory plan and there is currently no legal requirement for the preparation of the SEA. However, WRSE wishes to follow the SEA approach to help develop a sustainable regional plan and inform the SEAs of the water company WRMPs. Although not a legal requirement, the SEA for the regional plan will be legally compliant with the SEA Directive and Regulations so it can be used in the WRMP24 process.

The objective of SEA, according to Article 1 of the SEA Directive, is:

‘to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development’¹.

In order to do this, the SEA Directive requires plans and programmes to undergo an environmental assessment to determine the likely significant effects on issues such as biodiversity, climatic factors, human health, population, cultural heritage (including archaeology), air, material assets, landscape and water.

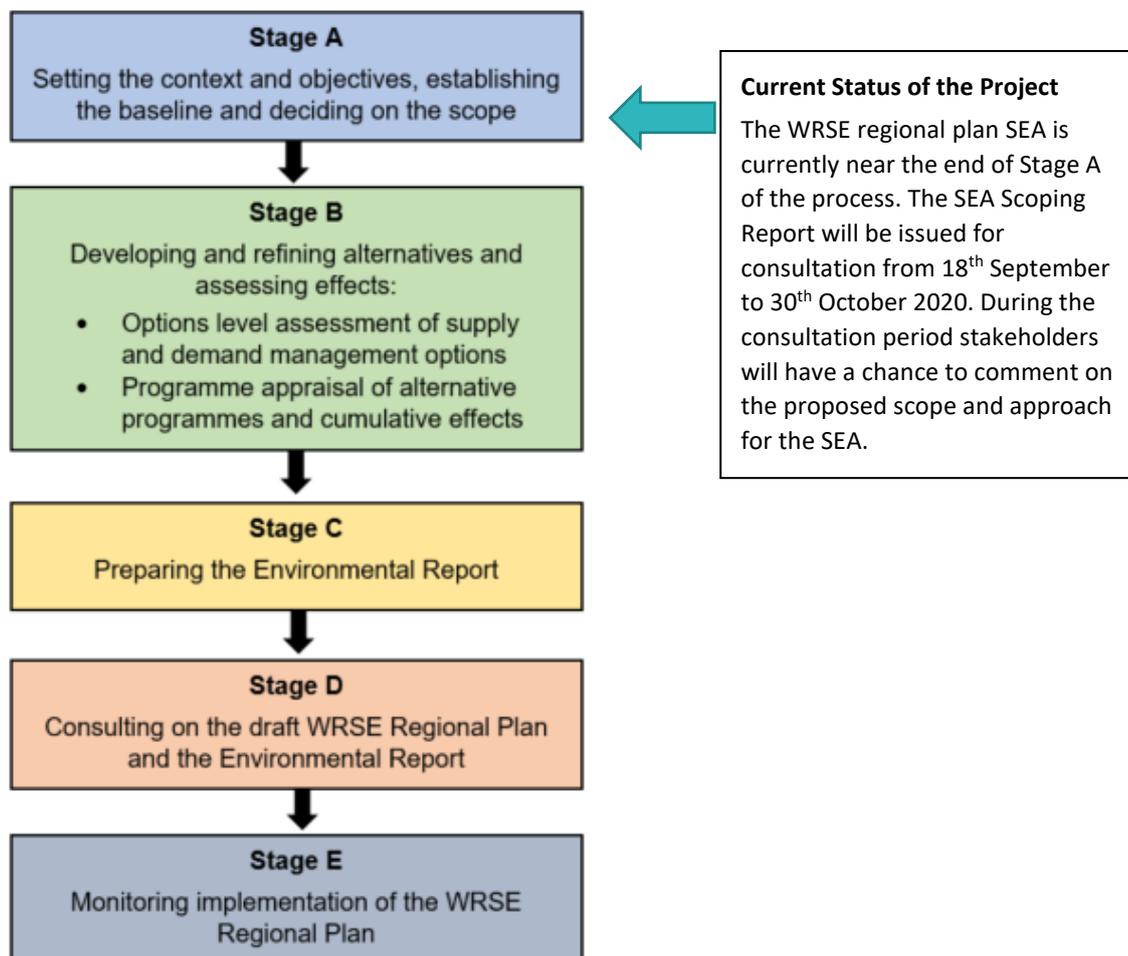
We are keen to hear your views on the SEA Scoping Report and have included a set of questions in Chapter 8 of this document. You can respond online at (<https://wrse.uk.engagementhq.com/strategic-environmental-assessment-scoping-report>) or email contact@wrse.org.uk

1.2 The SEA process

SEA works to inform the decision-making process through the identification and assessment of significant and cumulative effects a plan or programme may have on the environment. The SEA process is conducted at a strategic level and enables consultation on the potential effects of a plan with a wide range of stakeholders. Figure 1.1 shows the different stages in the SEA process. Appendix A presents the different tasks involved in each of the SEA stages.

¹ The SEA Directive does not define what is meant by Sustainable Development. However, the Government SEA Guidance “A Practical Guide to the SEA Directive” (September 2005) sets out what “promotion of sustainability development” means in the UK context. The guidance references the UK Sustainable Development Framework “Our Future – difference paths” (2005) which states “*The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without comprising the quality of life for future generations. For the UK Government that goal will be pursued in an integrated way through a sustainable, innovative and productive economy that delivers high levels of employment; and a just society that promotes social inclusion, sustainable communities and personal well-being. This will be done in ways that protect and enhance the physical and natural environment, and use resource and energy as efficiently as possible.*” This definition is reflected in the document ‘Mainstreaming sustainable development – The Government’s vision and what this means in practice’ (Defra, February 2011) which sets out the vision of “*stimulating economic growth and tacking the deficit, maximising wellbeing and protecting our environment, without negatively impacting on the ability of future generations to do the same*”.

Figure 1.1: SEA Process Stages



Source: Adapted from 'A Practical Guide to the Strategic Environmental Assessment Directive' (DCLG, 2005)

The SEA process will follow current and upcoming guidance on the application of SEA assessment within water resource planning including incorporating best practice within the proposed approach. The current and upcoming guidance documents include:

- Strategic Environmental Assessment: Core Objective Identification, 2020, All Company Working Group.
- Strategic environmental assessment and habitats regulations assessment - guidance for water resources management plans and drought plans, 2012, UK Water Industry Research
- Strategic environmental assessment and habitats regulations assessment - guidance for water resources management plans and drought plans, Update ongoing, UK Water Industry Research
- Water Resource Planning Guidelines – Draft for consultation, 2020, Environment Agency, Ofwat, Natural Resources Wales

1.3 Purpose of the scoping stage and report

The purpose of this Scoping Report is to set the context and scope for the SEA, covering Stage A of the SEA process (Department for Communities and Local Government (DCLG), September 2005). The

subsequent Environmental Report, published alongside the draft WRSE regional plan, will set out the results of the SEA assessment (covering Stages B to D). Stage E (Monitoring) will be carried out by WRSE as part of their annual monitoring.

Specifically, the scoping stage aims to:

- Review relevant International, European, National, and local policies, plans and programmes and their implications for the WRSE regional plan
- Establish the baseline environmental and socio-economic information and key sustainability issues and opportunities for the WRSE regional plan area
- Set the context and objectives of the SEA
- Decide on the scope for the SEA, ensuring that it covers all the likely significant environmental effects of the WRSE regional plan
- Provide an opportunity to engage and collaborate with the Consultation Bodies² and wider stakeholders

1.4 Limitations of the Scoping Report

Mott MacDonald has relied on published data and information provided by WRSE and from third party organisations in the production of this SEA Scoping Report. The baseline information collected in this SEA Scoping Report is the most up-to-date information currently available, however it is possible that conditions described in this report may change over time. The consultation process aims to address and minimise any gaps in information to ensure all potential environmental effects have been considered with regard to the WRSE regional plan.

The WRSE regional plan covers a large geographical area. Therefore, the baseline summarised in this report is currently a high-level review of conditions within the region. A Geographic Information System (GIS) tool has been developed to hold location specific baseline information. This tool will be used during the options assessment to provide more detailed information to enable the assessment of effects of each option.

² The Consultation Bodies are: Natural England, Historic England, and the Environment Agency.

2 Description and Context of the WRSE Regional Plan

2.1 Background and purpose

WRSE is formed of six water companies operating in the south east of England, including Affinity Water, Portsmouth Water, South East Water, SES Water, Southern Water and Thames Water as shown in Figure 2.1. The WRSE region covers approximately 26,400km² and is culturally diverse with a mix of major cities, including London, seaside towns and rural hamlets. The six water companies currently abstract, treat and distribute over five billion litres of water a day to the region equating to over a third of the water provided on average by water companies across the whole of England³.

The south east is the most populated region in the UK with a population of around 19 million and expected long-term growth of approximately four million⁴. The region is also home to businesses which contribute to 37% of the national economy and sees an annual addition of 28 million tourists. Growth in the south east, alongside a changing climate, will place additional pressure on the already scarce water resources with projections indicating that over 1 billion of additional litres will be required per day by 2050 and nearly 1.7 billion litres per day by 2100⁵.

2.2 Description of the WRSE regional plan

WRSE aims to secure resilient and sustainable water supplies for future generations through a collaborative, regional approach. The WRSE regional plan aims to take a long-term view to water resource planning across the region to 2100 in order to secure a sustainable and resilient water supply. The WRSE regional plan will seek to:

- Ensure there is enough water for a growing population and to support economic growth
- Improve the environment by leaving more water in the region's rivers, streams and underground sources
- Increase the region's resilience to severe drought and other extreme shocks and stresses
- Address the impacts of climate change on demand for water and how much is available

Further details and information on the WRSE regional plan is available on the WRSE website:

<https://www.wrse.org.uk/>

The regional plan is likely to consist of a range of supply and demand management options, catchment management options, third party options and multi-sector options. Supply options may include transfers, desalination, water reuse, conjunctive use, aquifer storage and recovery, reservoirs and trading. Demand management options may include leakage reduction, water metering, and water

³ WRSE (2020). Method Statements. Available at: <https://www.wrse.org.uk/media/1b5nwx5/wrse-method-statements-summary-document.pdf>

⁴ Available at: <https://www.wrse.org.uk/the-challenge>

⁵ WRSE (2020). Method Statements. Available at: <https://www.wrse.org.uk/media/1b5nwx5/wrse-method-statements-summary-document.pdf>

efficiency measures. These supply and demand management options will be provided to WRSE by the individual water companies as a constrained list of options. Strategic Resource Options (SROs) that cover more than one water company are also being proposed, and any SRO that is wholly or partially within the WRSE region will be assessed as part of the SEA and wider environmental assessment process.

2.3 The WRSE Environmental Destination

Environmental destination is a new term that was introduced through the Environment Agency's Water Resources National Framework⁶ document, published in March 2020. The term refers to the consideration of actions to build environmental resilience to future challenges, for example, to drought, flooding, raw water quality decline, impact from invasive non-native species, land use change, and impacts from run off. This information is important to understand to ensure we meet the objective of leaving the environment in a better place for future generations. This objective is also reflected in the Government's 25 Year Environment Plan⁷, which also pledged to improve resilience to drought and minimise interruption to water supplies. The 25-year plan also included a commitment to work with the water industry to set an ambitious personal consumption target.

Understanding how much water can be abstracted from the environment in a sustainable way now and in the future is important when developing a regional resilience multi-sector plan. In the past the regional plan has taken account of the supply and demand forecasts, but not the longer-term needs of the environment. This regional plan seeks to address this by incorporating an environmental forecast which sets out potential futures, looking at the potential water quality and availability requirements of the environment. The forecast will be based on previous investigations, river basin management plans, regional policies and a range of flow-based targets where no other evidence exists.⁸

The WRSE environmental assessments including the SEA will support the environmental destination by assessing and informing the long-term resilience of the regional plan and aiming to achieve a plan that provides environmental net gain against the four environmental metrics.

⁶ Meeting our future water needs: a national framework for water resources, Environment Agency (2020)

⁷ A Green Future: Our 25 Year Plan to Improve the Environment, HM Government (January 2018)

⁸ Method Statement: Environmental Ambition (Consultation version, July 2020). Available at: https://www.wrse.org.uk/media/zijbflid1/wrse_file_1333_wrse-ms-environmental-ambition-v2.pdf

3 Relationships with other Policies, Plans and Programmes

The SEA Directive requires:

‘an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes’

‘the environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation’

SEA Directive Annex I (a) and (e)

3.1 Policies, plans and programmes review

A review of the policies, plans and programmes relevant to the WRSE regional plan has been undertaken. The aim was to determine how the WRSE regional plan may be affected by these external factors. The WRSE regional plan must aim to support current relevant policies, plans, programmes and environmental protection legislation at an international, national and local level. A review of these documents is required to identify potential inconsistencies or constraints, and consistencies between these documents and the WRSE regional plan to inform the development of the SEA Framework. Table 3.1 lists the current relevant policies, plans, and programmes which were considered during the SEA scoping stage. Appendix B presents the policies, plans, and programmes review.

The WRSE regional plan must aim to support, and where possible, strengthen the objectives of other local plans and strategies within across the south east. However, as the WRSE regional plan covers such a large area, the local plans and policies have not been reviewed in detail at this stage. These will be reviewed as part of the water companies’ WRMP24 SEA process.

A database of reviewed plans and legislation has been developed to be used primarily for WRSE, however it is anticipated that it could also be used by individual water companies for their WRMP24 SEA to streamline the plans and programme review progress. The database is divided into policy level (International, European, national and local) and environmental topic (for example, biodiversity, human health). It is recognised that some plans will be cross-cutting and therefore, a cross-cutting category will also be included. The database will hold the name of the plan, a link to the source document, and a summary of the key policy objectives and themes, and any relevant specific targets. The database also demonstrates how the WRSE SEA Framework aligns with relevant policy.

3.2 Identification of key themes and messages

The main themes, messages and objectives from the policies, plans and programmes review that are considered relevant to the WRSE regional plan are presented below. These are as follows:

- Conserve flora and fauna and their habitats
- Conservation and wise use of wetlands and their resources
- Protection of wild birds and their habitats
- Halt overall biodiversity loss
- Creation of green infrastructure⁹
- Protection of landscape character and quality
- Improve water quality so all waters achieve 'good status' as set out in the Water Framework Directive
- Prevent or limit inputs of pollutants into groundwater
- Monitor and provide information to consumers on drinking water quality
- Promote efficient use of water
- Reduce and manage the risks of flooding
- Reduce greenhouse gas emissions
- Adapt to the impacts of climate change
- Increase resource efficiency and reduce natural resource use and waste
- Create a green economy and promote sustainable growth
- Promote sustainable and healthy communities¹⁰
- Promote social inclusion and community participation
- Protect cultural heritage assets including archaeology and built heritage
- Protect best quality soils and agricultural land
- Support the Lawton recommendation¹¹ for statutory undertakers planning the management of water resources to:
 - Make space for water and wildlife along rivers and around wetlands
 - Restore natural processes in river catchments, including in ways that support climate change adaptation and mitigation

⁹ The European Commission defines green infrastructure as a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens' health and quality of life. It also supports a green economy, creates job opportunities and enhances biodiversity. The Natura 2000 network constitutes the backbone of the EU green infrastructure. Available at: http://ec.europa.eu/environment/nature/ecosystems/index_en.htm

¹⁰ The UK Government definition of sustainable communities as outlined in the document 'Sustainable Communities: Homes for All' (ODPM, January 2005, page 74) is: "Sustainable communities are places where people want to live and work, now and in the future. They meet the diverse needs of existing and future residents, are sensitive to their environment, and contribute to a high quality of life. They are safe and inclusive, well planned, built and run, and offer equality of opportunity and good services for all". Available at: <https://webarchive.nationalarchives.gov.uk/20120920061353/http://www.communities.gov.uk/documents/corporate/pdf/homes-for-all.pdf>

¹¹ Lawton (2010). Making Space for Nature (Recommendation 4, Page 73). Available at: <https://www.gov.uk/government/news/making-space-for-nature-a-review-of-englands-wildlife-sites-published-today>

-
- Accelerate the programme to reduce nutrient overload, particularly from diffuse pollution.
 - Support the UK Government’s 25 Year Plan to Improve the Environment¹²:
 - Using and managing land sustainably – including embedding an “environmental net gain” principle into development (as supported by the draft Environment Bill 2020¹³).
 - Recovering nature and enhancing the beauty of landscapes
 - Connecting people to the environment to improve health and wellbeing
 - Increase resource efficiency and reducing pollution
 - Securing clean, healthy and productive and biologically diverse seas and oceans
 - Protecting and improving the global environment

The themes, messages and objectives identified from the policies, plans, and programmes review will provide an input into the process of identifying key issues and opportunities and developing the SEA Framework.

¹² UK Government (2018). A Green Future: Our 25 Year Plan to Improve the Environment. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf

¹³ UK Government (2020). Draft Environment Bill. Available at: <https://services.parliament.uk/bills/2019-21/environment.html>

Table 3.1: Policies, Plans and Programmes reviewed

Policies, Plans and Programmes

International	
<ul style="list-style-type: none"> ● Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) ● Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983) ● Convention on Biological Diversity (1992) ● Ramsar Convention - The Convention on Wetlands of International Importance (1971) ● United Nations (UN) Framework Convention on Climate Change (1992) ● Kyoto Protocol to the UN Framework Convention on Climate Change (1997) 	<ul style="list-style-type: none"> ● Commitments arising from the World Summit on Sustainable Development, Johannesburg (2002) ● Paris Agreement (2015) ● Charter for the Protection and Management of Archaeological Heritage (1990) ● The World Heritage Convention (1972) ● Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)
European	
<ul style="list-style-type: none"> ● Ambient Air Quality Directive (2008/50/EC) ● Thematic Strategy on Air Pollution (2005) ● Establishing measures for the recovery of the stock of European eel 2007 (1100/2007) ● Our life insurance, our natural capital: an EU biodiversity strategy to 2020 (2011) ● Fresh Water Fish Directive (2006/44/EC) ● Directive on the Conservation of Wild Birds (79/409/EEC) (as amended) ● Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC) ● 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) ● Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond (2007) ● A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy (2018) ● Promotion of the use of energy and renewable sources Directive (2009/28/EC) 	<ul style="list-style-type: none"> ● The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1985) ● The European Convention on the Protection of Archaeological Heritage (Valletta Convention) (1992) ● The European Landscape Convention (2006) ● The Environmental Noise Directive (2002/49/EC) ● European Soils Charter (2003) ● Thematic Strategy for Soil Protection (2006) ● The Nitrates Directive (91/676/EEC) ● The Water Framework Directive (WFD) (2000/60/EC) ● Urban Wastewater Treatment Directive (91/271/EEC) ● Drinking Water Directive (1998/83/EC) ● Directive on Bathing Water (76/160/EEC); and Directive 2006/7/EC repealing Directive 76/160/EEC (from 2014) ● Groundwater Directive (2006/118/EC) ● Marine Strategy Framework Directive (2008/56/EEC)

Policies, Plans and Programmes

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ● Energy Act 2013 ● Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development ● European Commission Environmental Liability Directive (2004/35/EC) ● Directive on the assessment of the effects of certain plans and programmes on the environment (2001/42/EC) | <ul style="list-style-type: none"> ● Directive on the Assessment and Management of Flood Risks (2007/60/EC) ● Blueprint to Safeguard Europe's Water Resources (2012) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

National

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ● The Eels (England & Wales) Regulations 2009 (as amended) ● Salmon and Freshwater Fisheries Act 1975 ● UK Post-2010 Biodiversity Framework, Joint Nature Conservation Committee (JNCC) and Defra (2012) ● Making Space for Nature - A review of England's Wildlife Sites and Ecological Network (2010) ● Biodiversity 2020: A strategy for England's wildlife and ecosystem services, Defra (2011) ● The Conservation of Habitats and Species Regulations (2010) (as amended) ● The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019) ● Delivering a healthy natural environment. Ecosystem approach action plan, Defra (2010) ● The Invasive Alien Species (Enforcement and Permitting) Order 2019 ● The Great Britain Invasive Non-Native Species Strategy, Defra (2015) ● A narrative for conserving freshwater and wetland habitats in England, Natural England (2016) ● Conservation 21 - Natural England's Conservation Strategy for the 21st Century, Natural England (2016) ● State of Natural Capital Annual Report 2020, Natural Capital Committee (2020) ● Standing Advice on Protected Species, Natural England (2016) | <ul style="list-style-type: none"> ● Environmental Assessment of Plans and Programmes Regulations 2004 ● Planning (Listed Buildings and Conservation Areas) Act 1990 ● The Ancient Monuments and Archaeological Areas Act 1979 ● Climate Change and the Historic Environment, English Heritage (2008) ● Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment, Historic Environment (2016) ● The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, Historic Environment (2017) ● Ancient Woodland and Veteran Trees: Protecting them from development, Forestry Commission and Natural England (2014) ● Our Waste, Our Resources: A Strategy for England, HM Government (2018) ● Safeguarding our Soils - A strategy for England, Defra (2009) ● Water Resources Act 1991 ● Water Industry Act 1991 ● Water Act 2003 (as amended) ● Preparing for a drier future: England's water infrastructure needs, National Infrastructure Commission (2018) ● Draft National Policy Statement for Water Resources Infrastructure, Defra (2018) ● Water for Life White Paper, Defra (2011) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
-

Policies, Plans and Programmes

- Climate Change Act 2008
- UK Climate Change Risk Assessment, Defra (2017)
- The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, Defra (2018)
- National Planning Policy Framework (NPPF) (2019)
- A Green Future: Our 25 Year Plan to Improve the Environment, UK Government (2018)
- The draft Environment Bill 2020
- Securing the Future – Delivering the UK Sustainable Development Strategy (2005)
- The Natural Choice: Securing the Value of Nature, Defra (2011)
- Marine and Coastal Access Act (2009)
- The Wildlife and Countryside Act 1981 (as amended)
- Environment Protection Act 1990
- Countryside and Rights of Way (CROW) Act
- The Natural Environment and Communities Act 2006 (NERC Act)
- Creating a better place: Our ambition to 2020, Environment Agency (2018)
- UK National Ecosystem Assessment Follow-on (2014)
- National Infrastructure Delivery Plan 2016–2021, Infrastructure and Projects Authority (HM Government) (2016)
- Fixing the foundations: Creating a more prosperous nation, HM Government (2015)
- Environment Act 1995
- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (as amended)
- Protect groundwater and prevent groundwater pollution, Environment Agency (2017)
- Groundwater protection technical guidance, Environment Agency (2017)
- The Environment Agency’s approach to groundwater protection, Environment Agency (2018)
- Flood and Water Management Act 2010
- Understanding the risks, empowering communities, building resilience: The National Flood and Coastal Erosion Risk Management Strategy for England, Defra and Environment Agency (2014)
- National Flood and Coastal Erosion Risk Management Strategy for England (2020)
- The Water Resources Management Plan Regulations 2007
- Water Resources Planning Framework (2015-2065), Water UK (2016)
- Water Supply (Water Quality) Regulations 2016 (as amended)
- National Policy Statement for Wastewater (2012)
- Climate change approaches in water resources planning – Overview of new methods, Environment Agency (2013)
- Future Water: the Government’s water strategy for England, Defra (2008)
- Water Resources Planning Guideline, Environment Agency (2016)
- Managing Water Abstraction, Environment Agency (2016)
- Marine Plans – South East Inshore, South Inshore, South Offshore (to be published 2021)
- UK Marine Policy Statement (2011)

Local

- Site Improvement Plans for Natura 2000 sites: London & South East, Natural England
- Local Development Plans (Various)
- National Character Areas (Various), Natural England
- Catchment Flood Management Plans (CFMPs), Defra and Environment Agency (2016)
- Shoreline Management Plans (Various)
- Catchment Management Strategies (Various)

Policies, Plans and Programmes

- River Basin Management Plans (RBMPs), Defra and Environment Agency (2015)
- National Park Management Plans – New Forest and South Downs
- AONB Management Plans (Various)

WRSE Water Companies

- Affinity Water
 - Environment Policy (2019)
 - WRMP 2020-2080 (2020)
 - Drought Plan Annual Update (2019)
 - Revised Business Plan (2019)
 - Portsmouth Water
 - Biodiversity, Public Amenities and Recreation Strategy (undated)
 - WRMP 2020-2045 (2019)
 - Drought Plan (2019)
 - Business Plan 2020-2025 (2018)
 - SES Water
 - Environment Policy (2019)
 - WRMP 2020-2045 (2019)
 - Drought Plan (2019)
 - Business Plan 2020-2025 (2018)
 - Southern Water
 - Environment Policy (2019)
 - WRMP 2020-2070 (2019)
 - Drought Plan (2019)
 - Business Plan 2020-25 (2019)
 - South East Water
 - WRMP 2020 to 2080 (2019)
 - Drought Plan 2018 to 2030 (2019)
 - Pure know h2ow – Business Plan 2020 to 2025 (2019)
 - Thames Water
 - Sustainability Policy
 - WRMP 2020 to 2100 (2019)
 - Drought Plan (2017)
 - Building a better future – Business Plan 2020 to 2025
-

4 Environmental Baseline

The SEA Directive requires:

‘the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme’

‘the environmental characteristics of areas likely to be significantly affected’

SEA Directive Annex I (b) and (c)

4.1 Introduction

The current environment and socio-economic baseline was reviewed for the WRSE region. The baseline information is presented under the SEA Directive topics and provides an evidence base which environmental issues or opportunities resulting from the WRSE regional plan can be predicted and assessed. Maps showing key spatial baseline information are presented in Appendix C and referenced within this chapter. The baseline summarised in this chapter is a high-level overview of the baseline conditions for the region. More detailed location specific baseline information has been developed in a GIS database and will be used as part of the options assessment process to identify the effects of each option.

The baseline information in this chapter was collected from published sources as referenced in the text below, including but not limited to the following sources:

- Office for National Statistics (ONS)
- Local Authority Health Profiles (Public Health England, 2018)
- Department for Transport
- UK Climate Projections 2018 (UKCP18)
- Historic England
- Natural England
- Department for Environment, Food and Rural Affairs (Defra)
- Environment Agency

4.2 Baseline information

4.2.1 Biodiversity, flora and fauna

4.2.1.1 Designated sites

The WRSE 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 ecological sites across the WRSE region is presented in Table 4.1 and shown in Map C.1 to C.4 in Appendix C.

Table 4.1: Ecological sites in the WRSE Region

Designated Site	Total Number
SAC	298
SPA	196
Ramsar	126
SSSI	1,661
NNR	86
LNR	480
MPA	1
MCZ	14

4.2.1.2 Flora and fauna

The WRSE region is rich in species and habitat diversity. Under the Natural Environment and Rural Communities (NERC) Act 2006, WRSE 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).

The WRSE region is made up of the following terrestrial land cover types: agriculture (56.5%); urban (23.2%); woodland (13.2%); semi-natural grassland (5.3%); and surface water (1.5%). There is a large stretch of coastline in the WRSE region which supports a wide range of wetland, coastal and estuarine habitats and species.

Priority habitats make up 16.6% of the WRSE region equating to a total of 39,5109ha¹⁴. Deciduous woodland accounts for the highest percentage of priority habitat in the region. The split of the priority habitat by type across the region is shown in Table 4.2. The region also contains 1611.2 km of Chalk rivers and streams.

Table 4.2: Priority habitats in the WRSE Region

Priority Habitat Type	Hectares (ha)	Percentage
Coastal and floodplain grazing marsh	36,775.01	1.55%
Coastal saltmarsh	1,532.99	0.06%
Coastal sand dunes	721.64	0.03%
Coastal vegetated shingle	969.85	0.04%
Deciduous woodland	246,956.09	10.41%
Good quality semi-improved grassland	22,653.33	0.96%
Lowland calcareous grassland	14,550.19	0.61%

¹⁴ Natural England (2020). Priority Habitat Inventory. Available at: <https://data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitat-inventory-england>

Priority Habitat Type	Hectares (ha)	Percentage
Lowland dry acid grassland	2,163.03	0.09%
Lowland fens	2,923.69	0.12%
Lowland heathland	12,490.14	0.53%
Lowland meadows	4,483.36	0.19%
Maritime cliff and slope	1,235.04	0.05%
Mudflats	9,832.43	0.41%
No main habitat but additional habitats present	33,286.60	1.40%
Purple moor grass and rush pastures	415.03	0.02%
Reedbeds	563.45	0.02%
Saline lagoons	364.60	0.02%
Traditional orchard	3,193.23	0.13%

4.2.2 Water

The WRSE region is one of the driest areas in the UK and Affinity Water, South East Water, SES, Southern Water and Thames Water are all classed as areas with serious water stress¹⁵. Around half of the region’s water supply comes from underground sources with some water resource zones relying completely on underground sources¹⁶. Precipitation during winter months is crucial for these sources meeting higher demand during spring and summer months. 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 WRSE region.

The main rivers in the WRSE region are shown on Map C.5 in Appendix C. The river basin districts which make up the WRSE region are Thames and the South East. The Thames river basin district covers an area of 16,200km² and includes 17 management catchments which range from chalk streams and aquifers to tidal and coastal marshes¹⁷. These support a rich diversity of species and habitats some of which are of national or European importance. The number of water bodies within the Thames river basin district is presented in Table 4.3. The current status of the ground and surface water bodies in the Thames district is presented in Table 4.4 and Table 4.5. Phosphate followed by physical modifications are the two most common pressures preventing the water bodies in the Thames river basin district from achieving ‘Good’ status. Pollution from wastewater followed by physical modifications and pollution from towns and cities are reported as the most common significant water management issues affecting the achievement of ‘Good’ status.

¹⁵ Environment Agency (2013). Water Stressed Areas – Final Classification. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf

¹⁶ WRSE (2020). Future water resource requirements for South East England. Available at: <https://www.wrse.org.uk/media/anbhm2cb/wrse-future-water-resource-requirements-march-2020-3.pdf>

¹⁷ Defra and Environment Agency (2015). Part 1: Thames River Basin District – River Basin Management Plan. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718342/Thames_RBD_Part_1_river_basin_management_plan.pdf

Table 4.3: Number of water bodies in the Thames river basin district

Water body categories	Natural	Artificial	Heavily modified	Total
Rivers, canals and surface water transfers	287	21	106	414
Lake	7	47	19	73
Coastal	0	0	1	1
Estuarine	1	4	5	10
Groundwater	47	0	0	47
Total	342	72	131	545

Source: Thames River Basin Management Plan (RBMP)

Table 4.4: Ecological and chemical 2015 classification for surface waters in the Thames river basin district

No. of water bodies	Ecological status or potential					Chemical status	
	Bad	Poor	Moderate	Good	High	Fail	Good
498	27	112	320	29	0	5	493

Source: Thames RBMP

Table 4.5: Chemical and quantitative 2015 classification for groundwaters in the Thames river basin district

No. of water bodies	Quantitative status		Chemical status	
	Poor	Good	Poor	Good
47	22	25	18	29

Source: Thames RBMP

The South East river basin district covers an area of 10,200km² and is made up of nine management catchments which range from chalk streams of the Test and Itchen catchments to the modified rivers of the Rother catchment¹⁸. These also support diverse species and habitats some of which are of national or European importance, including migratory salmon rivers, native white clawed crayfish, and estuaries and coastal waters important for shellfish, wintering wildfowl, breeding gulls and terns. The chalk groundwater provides most of the drinking water within the river basin district at 72%. The number of water bodies in the South East river basin district is presented in Table 4.6. The current status of the ground and surface water bodies in the South East district is presented in Table 4.7 and Table 4.8. Phosphate followed by physical modifications are also the most common water pressures affecting the water bodies in the South East river basin district from achieving 'Good' status. Pollution from wastewater followed by physical modifications and pollution from rural areas are reported as the most common significant water management issues affecting the achievement of 'Good' status.

¹⁸ Defra and Environment Agency (2015). Part 1: South East River Basin District – River Basin Management Plan. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718337/South_East_RB_D_Part_1_river_basin_management_plan.pdf

Table 4.6: Number of water bodies in the South East river basin district

Water body categories	Natural	Artificial	Heavily modified	Total
Rivers, canals and surface water transfers	138	13	69	220
Lake	2	16	10	28
Coastal	2	0	9	11
Estuarine	1	5	17	23
Groundwater	33	0	0	33
Total	176	37	105	315

Source: South East RBMP

Table 4.7: Ecological and chemical 2015 classification for surface waters in the South East river basin district

No. of water bodies	Ecological status or potential					Chemical status	
	Bad	Poor	Moderate	Good	High	Fail	Good
282	10	60	169	43	0	5	277

Source: South East RBMP

Table 4.8: Chemical and quantitative 2015 classification for groundwaters in the South East river basin district

No. of water bodies	Quantitative status		Chemical status	
	Poor	Good	Poor	Good
33	16	17	16	17

Source: South East RBMP

The RBMPs for the Thames and South East river basin district highlight significant water management issues which prevent the sustainable management of water within each river basin as presented in Table 4.9. For both the river basin districts, physical modifications and pollution from wastewater affect the highest proportions of water bodies followed by pollution from rural areas.

Table 4.9: Water management issues

Water Management Issue	Percentage of water bodies affected	
	Thames	South East
Physical modifications	44%	43%
Pollution from wastewater	45%	40%
Pollution from towns, cities and transport	17%	9%
Changes to the natural flow and level of water	12%	7%
Negative effects of invasive non-native species	3%	2%
Pollution from rural areas	27%	30%

Source: Thames and South East RBMP

4.2.2.1 Flood risk

Flood risk across the WRSE region is diverse and can occur from a wide range of sources including rivers and the sea, groundwater, reservoir and surface water. Climate change, as covered in Section 4.2.5, is projected to result in more extreme weather events which alongside projected increases in sea level is likely to have an impact on the future flood risk of the region.

The Thames river basin district has over 227,000 people at high risk of surface water flooding and over 107,000 people are at high risk of flooding from rivers and the sea¹⁹. It contains two primary flood risk areas (FRAs)²⁰, the London and Medway, which are areas with higher risk of surface water flooding. There is also one partial flood risk area, South Essex, which is partly within the Thames river basin district.

The South East river basin district consists of one primary flood risk area, Brighton and Hove, and there are over 31,000 people at high risk of surface water flooding and over 36,000 people at high risk of flooding from rivers and the sea²¹. There has been notable and severe flooding occurring across the basin in recent years which resulted in significant impacts on communities, businesses and the natural environment.

4.2.3 Soil

The WRSE region is a hub for agriculture with cereal and livestock grazing being the most predominant type of farming²². 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 of Grade 2 and Grade 3 with pockets of urban and non-agricultural land as shown on Map C.5 in Appendix C. There are some areas with Grade 1, particularly around the south and south east coast.

The south east of England and London has the largest area of licensed landfill sites of anywhere else in the country²³. Currently, there are approximately 400 authorised landfill sites across the WRSE region²⁴.

4.2.4 Air

Air quality in the WRSE region is varied and there are certain areas with higher concentrations of air pollutants likely to be associated with transport or business activities. Air Quality Management Areas

¹⁹ Environment Agency (2016). Thames River Basin District Flood Risk Management Plan 2015 – 2021. Available at: <https://www.gov.uk/government/publications/thames-river-basin-district-flood-risk-management-plan>

²⁰ Primary FRAs are defined in the River Basin Flood Risk Management Plans as areas where the risk of flooding from local flood risks is significant as designated under the Flood Risk Regulations.

²¹ Environment Agency (2016). South East River Basin District Flood Risk Management Plan 2015 – 2021. Available at: <https://www.gov.uk/government/publications/south-east-river-basin-district-flood-risk-management-plan>

²² Defra (2020). Agricultural facts: overview of agricultural activity in the South East (including London). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/866815/regionalstatistics_southeast_20feb20.pdf

²³ Environment Agency (2002). Dealing with contaminated land in England. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/313967/dealing_with_contaminated_land_i.pdf

²⁴ Environment Agency (2020). Permitted Waste Sites - Authorised Landfill Site Boundaries. Available at: <https://data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permitted-waste-sites-authorised-landfill-site-boundaries>

(AQMA) are declared where the national air quality objectives are not being met²⁵. A high proportion of the local authorities which fall within the WRSE region contain at least one AQMA and are predominately designated for Nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀)²⁶.

4.2.5 Climatic factors

4.2.5.1 Current climate trends

Current observations indicate that the UK is continuing to warm. In 2019, four new temperature records were set, including a high of 38.7°C and a new winter record of 21.2°C²⁷. The decade between 2010 and 2019 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 decades with 2019 seeing 107% more rainfall than the 1981-2010 average²⁸. Summers have been 11% wetter on average than 1981-2010 and 13% wetter than 1961-1990. Winters have been 4% and 12% wetter than 1981-2010 and 1961-1990 respectively.

High-level climate observations for regions across the UK are publicly available from the Met Office for the 30-year period between 1981-2010²⁹. Those published for Southern England are presented in Table 4.10.

Table 4.10: Southern England climate observations

Climatic Condition	Climate Observation
Temperature	Mean annual temperatures range from around 11.5°C in central London and along the coast to around 9.5°C over higher ground inland. The coldest month is January where daily minimum temperatures range from over 3°C in London and along the coast to 0.5°C over the higher ground. July is the warmest month with daily mean maximum temperatures of 23.5°C, the highest in the UK. Extreme maximum temperatures can occur in July or August and are usually associated with heat waves lasting several days.
Precipitation	The wettest areas in Southern England are the South Downs and the higher parts of Dorset with an average of over 950mm per year. The Thames Valley, London and the north Kent coast usually receive less than 650mm per year and less than 550 around the Thames Estuary. Precipitation is generally well-distributed throughout the year in the region; however, an autumn/early winter maximum is more pronounced in the counties bordering the English Channel. In London and the Thames Valley there are also significant amounts in the summer associated with showery, convective rainfall. The region is susceptible to periods of prolonged rainfall which leads to widespread flooding, particularly in winter and early spring. However, the region can also be subject to dry periods, placing demands upon water supplies.

²⁵ Defra National Air Quality Objectives. Available at: https://uk-air.defra.gov.uk/assets/documents/National_air_quality_objectives.pdf

²⁶ Defra List of Local Authorities with AQMA. Available at: <https://uk-air.defra.gov.uk/aqma/list>

²⁷ RMets (2020). State of the UK Climate. Available at: <https://rmets.onlinelibrary.wiley.com/doi/epdf/10.1002/joc.6726>

²⁸ RMets (2020). State of the UK Climate.

²⁹ Met Office (2016). UK Regional Climates – Southern England. Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/regional-climates/index>

Climatic Condition	Climate Observation
Sunshine	Southern England includes the sunniest places in the mainland UK. The coastal areas of Sussex and Hampshire and also the Isle of Wight features in the list of high sunshine averages. The average annual sunshine durations on the coast can exceed 1800 hours, but 1550-1600 hours is typical of most of the region with a decrease towards the north.
Snowfall	The number of days with snow falling in the Southern England region is around 12-15 per year on average over the lower lying areas. On the higher ground areas of the Chilterns, North Downs and Weald, snow falling days can be around 20 per year on average. The least snow-prone places are those close to the English Channel, with less than 10 days. The number of days with snow lying has a similar distribution, with five days per year in most inland areas but over 10 days on the higher ground particularly to the east and north
Wind	Southern England is one of the most sheltered parts of the UK. The number of days where gale force winds are reached (mean speed of 34 knots) is typically one to two days per year over most inland areas, however exposed places along the coast experience around 10 days per year.

Source: Met Office 2016

4.2.5.2 Climate projections

The Met Office UK Climate Projections (UKCP) were updated for the first time since 2009 in December 2018 (UKCP18)³⁰. 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 south east of England by the 2050s (2040-2069), under the RCP8.5 scenario (high emissions scenario) are detailed in Table 4.11. 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 4.11: Future climate projects by the 2050s under the RCP8.5 scenario

Climatic Factor	Climate Projections
Temperature	Annual mean temperatures are projected to increase by 2.0°C. Summer temperatures are projected to see the largest increase by 2.6°C and winter temperatures by 1.7°C. Mean maximum summer temperatures are projected to increase by 2.9°C.
Precipitation	Annual mean precipitation is projected to decrease by 1.1%. Seasonal variability is projected with a 22.9% decrease in precipitation during summer months and an increase of 11.5% during winter months.

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

³⁰ Met Office UKCP18. Available at: <https://ukclimateprojections-ui.metoffice.gov.uk/>

4.2.5.3 Greenhouse gas emissions

Based on the local authorities which fall within the WRSE region, as shown in Appendix D, the total carbon dioxide (CO₂) emissions for 2018 across all sectors is estimated at 95,371 kilo tonnes (ktCO₂) (not including Land use, land-use change, and forestry (LULUCF))³¹.

The transport sector contributed the highest proportion of emissions to the total in 2018 at 40% followed by the domestic and industrial sector at 31% and 29% respectively. The LULUCF sector is estimated to be responsible for the removal of 2,406ktCO₂ equating to a 3% reduction in the total CO₂ emissions³².

4.2.6 Population and human health

4.2.6.1 Population

Approximately 19 million people, equating to around 30% of the UK's total population, live within the WRSE region³³. Settlements within the region are diverse and range from large population centres such as London to small rural hamlets and seaside towns. Long-term population growth in the region is anticipated to be around four million³⁴.

The distribution of age amongst the population in the WRSE region is similar to the UK average where 20% are aged 15 and under, 66% are between 16 and 64, and 14% are over 65³⁵. Those aged 30 to 44 make up the largest proportion of the population at 23% followed by 45 to 59 at 18%.

Ethnicity in the WRSE region is predominately White. There are larger proportions of Black, Asian and Mixed ethnicities in the urban areas of the region compared to rural areas with respective populations of 13%, 8% and 4%³⁶ across the WRSE region.

4.2.6.2 Human health

Life expectancy at birth for both males and females in the WRSE region is better than the England average at around 81 years old and 84 years old respectively³⁷. Against the various indicators included within the Public Health Profiles, the region is generally better than the national average. Where the region is performing worse than the national average is against the following indicators: estimated diabetes diagnosis rate; year 6: prevalence of obesity (including severe obesity); emergency hospital admissions for intentional self-harm; and killed and seriously injured (KSI) casualties on roads³⁸.

The percentage of the population describing their general health as very good, good, fairly good, not good, and very bad is shown in Table 4.12³⁹. London and South East are similar to one another with

³¹ BEIS (2020). UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018. Available at: <https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018>

³² BEIS (2020). UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018.

³³ Available at: <https://www.wrse.org.uk/the-challenge>

³⁴ WRSE (2020). Method Statements. Available at: <https://www.wrse.org.uk/media/ib5nwwx5/wrse-method-statements-summary-document.pdf>

³⁵ NOMIS (2011). Age structure (KS102EW) for South East and London. Available at: <https://www.nomisweb.co.uk/census/2011/ks102ew>

³⁶ NOMIS (2011). Ethnic group (QS201EW) for South East and London. Available at: <https://www.nomisweb.co.uk/census/2011/qs201ew>

³⁷ Public Health England (2019). Public Health Profiles for South East and London. Available at: <https://fingertips.phe.org.uk/profile/health-profiles/data#page/0/gid/1938132701/pat/15/par/E92000001/ati/6/are/E12000004/iid/90323/age/201/sex/4/cid/4/page-options/ovw-do-0>

³⁸ Public Health England (2019). Public Health Profiles for South East and London.

³⁹ ONS (2013). General Health in England and Wales. Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/articles/generalhealthinenglandandwales/2013-01-30#general-health-across-the-english-regions-and-wales>

slight differences in those describing their health as very good, good and fair, and tend to be aligned to the average for England.

Table 4.12: Population health by region

Region	General health very good (%)	General health good (%)	General health fairly good (%)	General health bad (%)	General health very bad (%)
London	51	33	11	4	1
South East	47	35	13	4	1
England	47	34	13	4	1

Source: ONS - Census 2011

4.2.6.3 Economy

The WRSE region contributes around 37% of the total UK economy with London and the South East being the first and second largest contributors respectively⁴⁰. Gross Domestic Product (GDP) per head is £54,686 in London and £34,083 in the South East both of which are higher than the national UK average of £31,976. The service industry dominates the employment sector across the WRSE region with London having the highest proportion of service jobs compared to anywhere else in the UK⁴¹. The South East is made up of a higher proportion of production jobs compared to London.

For the three months ending June 2020, the employment rate (those between ages 16 and 64 in the WRSE region was higher than the UK average. The South East region had the highest employment rate across the whole of the UK at 79.7%, similar to what was recorded the previous year⁴², and for London it was 76.5% and saw an increase of 1.9% compared to the previous year. Unemployment rates in London for the three months ending June 2020 were higher than the national average (3.9%) at 4.6% and South East was lower at 3.3%, both of which are similar to the previous year.

Tourism is an important sector within the WRSE region’s economy attracting visitors from across the UK and internationally. In 2019, there were 15.8 million domestic overnight trips to the South East, making it the most visited place second to the South West, and there were 12.2 million overnight trips to London⁴³. International visits to the WRSE region in 2019 were around 27 million in 2019, up 3% from the previous year, with an average night stay of around 6 nights and total expenditure of £18.3 billion⁴⁴. These visits are predominately for holidays (48%) followed by visiting friends and relatives (27%) and business (19%), the remainder is for study and miscellaneous.

The Index of Multiple Deprivation (IMD) (2015) for the Lower Super Output Areas (LSOAs) within the region are ranked from 1 to 10 with 1 being the most deprived and 10 being the least. Around 50% of

⁴⁰ ONS (2019). Regional economic activity by gross domestic product, UK: 1998 to 2018. Available at: <https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/regionaleconomicactivitybygrossdomesticproductuk/1998to2018>

⁴¹ (ONS (2020). Labour market in the regions of the UK: August 2020. Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/regionallabourmarket/august2020>

⁴² ONS (2020). Regional labour market: Headline Labour Force Survey indicators for all regions (HI00). Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/headlinelabourforcesurveyindicatorsforallregionshi00>

⁴³ Visit England (2020). Great Britain Tourist Annual Report 2019 – London and South East. Available at: https://www.visitbritain.org/sites/default/files/vb-corporate/gb_tourist_annual_report_2019.pdf

⁴⁴ Visit England (2020). Inbound nation, region & county data – London and South East. Available at: https://www.visitbritain.org/nation-region-county-data?area=1800_100

the LSOAs in the region have an IMD ranking of between 3 and 6, 27% have a ranking of 7 or over and the remaining 23% are 2 or below⁴⁵.

4.2.7 Historic environment

The WRSE region is rich in heritage with listed buildings, scheduled monuments, conservation areas, registered parks and gardens, registered battlefields, protected wrecks and world heritage sites. The total number of each of these assets within the WRSE region is presented in Table 4.13. Scheduled monuments, registered parks and gardens, and registered battlefield are shown in Map C.6 in Appendix C.

Table 4.13: Historic environment assets

Asset	Description	Number	
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	2,562
		Grade II*	6,235
		Grade II	103,433
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	65
		Grade II*	169
		Grade II	379
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.	3,384	
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	2,649	

⁴⁵ Ministry of Housing, Communities & Local Government (2015). English indices of deprivation 2015. Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015>

Asset	Description	Number
	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.	
Protected Wrecks	The Protection of Wrecks Act (1973) allows the Government to designate a wreck to prevent uncontrolled interference. Designated sites are identified as being likely to contain the remains of a vessel, or its contents, which are of historical, artistic, or archaeological importance.	1
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.	8
World Heritage Sites	The United Nations Educational, Scientific and Cultural Organization (UNESCO) seeks to encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity.	10

Source: Historic England

It is likely that most of the Local Authorities in the WRSE 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.

4.2.8 Landscape

The landscape across the WRSE region is diverse and is made up of a mixture of lowlands and small hills. The WRSE region also has a striking stretch of coastline, including the cliffs of Dover, and picturesque seaside villages. Agriculture plays an important role in the landscape, however the WRSE region also has densely populated areas. The Green Belt around London is an important aspect of the WRSE region landscape which exists to prevent urban sprawl.

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 activity⁴⁶. There are 34 NCAs within the WRSE boundary.

National Parks are designated to protect their outstanding landscape and countryside, wildlife and cultural heritage. There are two National Parks located within the WRSE region, New Forest and South Downs, which became designated in 2005 and 2010 respectively. New Forest National Park covers an

⁴⁶ Natural England (2014). NCAs. Available at: <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making>

area of 566km² and is made up of ancient woodland, open heathlands and coastline⁴⁷. South Downs National Park is designated for its rolling hills, picturesque towns and villages, and dramatic cliffs⁴⁸.

Areas of Outstanding Natural Beauty (AONB) are protected to conserve and enhance their natural beauty and distinctiveness⁴⁹. There are eight AONB within the WRSE regional which are detailed in Table 4.14 and shown on Map C.7 in Appendix C.

Table 4.14: AONB

AONB	Description
Kent Downs	Kent Downs AONB consists of rolling rural land which meets the sea at the cliffs of Dover. The Kent Downs rise to over 240m and the river valleys of the Darent, Medway and Stour run through it. It supports a variety of wildlife in the unimproved chalk grassland and broadleaved woodlands.
High Weald	High Weald AONB is made up of rolling hills, dissected by steep-sided gill streams and sandstone outcrops. There are small and irregular shaped fields and open heath and there is an abundance of interconnected ancient woodlands. Scattered farmsteads and hamlets also make up the area and there are narrow sunken lanes from the movement of animals.
Surrey Hills	Surrey Hills AONB spans Surrey from east to west which together with the Green Belt prevents the advancing London sprawl. The deciduous woodlands of the AONB have ecological importance alongside the chalk grassland and unimproved heath. The built environment, including villages such as Shere and Abinger, is also part of the quality of the AONB.
Chichester Harbour	Chichester Harbour AONB is one of the few remaining undeveloped coastal areas in Southern England. It is a series of tidal inlets, with a narrow mouth to the sea, and wind-sculptured oaks and hawthorns line the shore. There are saltmarsh and mudflats which are important for wildlife and birds, supporting large flocks of Brent Geese, Dunlin and Little Egrets. The wide expanses and indicate creeks are also important for recreational boating.
Isle Of Wight	Half of the Isle of Wight is designated as an AONB in separate areas and include the principal landscape features of the interior's central and southern downlands and also much of the coastline. The AONB landscape is of considerable scientific and ecological importance and includes exceptional flora-rich chalk grasslands, the north coast's major estuarial habitats and the geologically notable southern cliffs and landslips.
Chilterns	Chilterns AONB is made up of rounded hills which are part of the chalk ridge that crosses England from Dorset to Yorkshire. The characteristic scarp slope looks out north over the panorama of the Vale of Aylesbury and the dip slope curves gently down into the London Basin. The Chilterns AONB is heavily wooded and supports a diversity of habitats ranging from the country's most extensive areas of beech woodland to chalk grassland.

⁴⁷ Visit Hampshire – New Forest National Park. Available at: <https://www.visit-hampshire.co.uk/explore/areas-to-visit/new-forest>

⁴⁸ South Downs National Park. Available at: <https://www.southdowns.gov.uk/our-history/why-are-we-a-national-park/>

⁴⁹ Natural England (AONBs): designation and management. Available at: <https://www.gov.uk/guidance/areas-of-outstanding-natural-beauty-aonbs-designation-and-management>

AONB	Description
North Wessex Downs	North Wessex Downs AONB was designated to protect one of the largest tracts of chalk downland in southern England and perhaps one of the least affected by development. The AONB meets the Thames and the Chilterns AONB and loops south round the Kennet Valley. The AONB includes ancient woodlands and is of archaeological significance and includes a World Heritage Site.
Cotswolds	Cotswold AONB rises gently west from the broad, green meadows of the upper Thames to crest in a dramatic escarpment above the Severn valley and Evesham Vale. The distinctive character of the AONB is made up of Jurassic limestone. It is nationally important for the rare limestone grassland habitat and for ancient beechwoods with rich flora.

Source: Landscapes for Life⁵⁰

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 quality⁵¹. The Campaign for Rural England (CPRE) developed a tranquillity map for England to show the range of undisturbed or disturbed tranquillity areas across the country⁵². There are areas of high tranquillity distributed throughout the WRSE region with the least tranquil areas surrounding areas with higher population, particularly London and the surrounding area.

4.2.9 Material assets

4.2.9.1 Transport

The WRSE region boasts an extensive transport network which connects people, places and services both within the region and beyond to support the regional and national economy. It supports gateways for international trade with the UK’s two busiest airports, Heathrow and Gatwick, and the two busiest UK ports are also located within the region. Southampton is a deep-sea port on the main international shipping line and Dover is where one seventh of the UK’s trade passes through and is Europe’s busiest ferry port⁵³. The rail link to Europe via the Channel Tunnel Rail Link is also located within the region.

4.2.9.2 Resource use and waste

In 2018/19 the total amount of local authority managed waste was 25.6 million tonnes. The South East managed the largest tonnage of local authority collected waste in 2018/19 at 4.2 million tonnes and London managed 3.6 million tonnes in the same period⁵⁴. Incineration accounts for the most common waste disposal method by local authorities in the region with the South East sending 42% of all waste for incineration, and London sending 59% which made it the highest out of all the regions across England. Recycling and composting is the second most common waste disposal method, accounting for 48% of

⁵⁰ Landscape for Life - The UK’s AONBs Overview. Available at: <https://landscapesforlife.org.uk/about-aonbs/aonbs/cotswolds>

⁵¹ CPRE (2015). Give Peace a Chance. Available at: https://www.cpre.org.uk/wp-content/uploads/2019/11/CPRE_-_Give_peace_a_chance_-_May_2015.pdf

⁵² CPRE (2007). Map of Tranquillity. Available at: https://www.cpre.org.uk/wp-content/uploads/2019/11/tranquillity_map_england_regional_boundaries_1.pdf

⁵³ Transport for the South East (2018). Economic Connectivity Review. Available at: <https://transportforthesoutheast.org.uk/wp-content/uploads/2018/07/FINAL-Economic-Connectivity-Review.pdf>

⁵⁴ Defra (2019). Statistics on waste managed by local authorities in England in 2018/19. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906559/201819_LA_collected_waste_mgt_annual_stats_notice_FINAL_Accessible_rev_v11.pdf

total waste in the South East and 30% in London. Landfill waste is 9% and 7% in the South East and London respectively.

4.2.10 Natural capital

The WRSE region 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 National Ecosystem Services assessment. The region also contains several key abiotic stocks including fertile soils and coastal shelves.

4.2.10.1 Soils and geology

Detailed Information on soils stocks with the WRSE region is provided in Section 4.2.3 and within Map C.5 in appendix C. The WRSE region contains important stocks of soils nationally

4.2.10.2 Freshwater

Freshwater natural capital stocks cover approximately 1.5% of the WRSE regions. This encompasses all waterbodies and wetlands such as rivers ponds fens marshes and bogs. Within the WRSE region artificial freshwater habitats, such as canals and reservoirs are also an important natural capital stock. These natural capital stocks are vital to support the regions biodiversity and provide other ecosystem services such as water supply, climate regulation and cultural services

4.2.10.3 Farmland

Farmland natural capital stocks cover approximately 56.5% of the WRSE regions, 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.

4.2.10.4 Grasslands

Grassland natural capital stocks cover approximately 5.3% of the WRSE 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 reaction and physical benefits.

4.2.10.5 Urban

Urban natural capital stocks cover approximately 23.2% of the WRSE 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.

4.2.10.6 Woodland

Woodland natural capital stocks cover approximately 13.5% of the WRSE 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.

4.2.10.7 Coastal and marine

Coastal and marine habitats cover less than 1% of the land cover within the WRSE 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.

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

4.3 Future baseline

The SEA Directive 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 will continue:

- **Air quality** - new development, economic growth and tourism may lead to increased car journeys and congestion within the area leading to localised air quality effects. Public transport improvements, national air quality targets and European emissions standards for new vehicles should contribute to reducing future air quality impacts from motor vehicles.
- **Water** – water quality is likely to continue to be maintained and improved through legislation such as the WFD. The region is already water-stressed and projected economic and population growth will likely place further pressure on the region’s water resources and water dependent environments. There is potential for an increased need for wastewater treatments as a result of WFD water quality standards combined with population increase. Given the energy intensity of wastewater treatment, the water industry CO₂ emissions may increase and further contribute to climate change.
- **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. Climate change is projected to result in more extreme weather events, potentially causing or exacerbating periods of drought which alongside population and economic growth will impact water availability. 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 2030⁵⁵.

⁵⁵ Available at: <https://www.water.org.uk/news-item/water-industry-plans-to-reach-net-zero-carbon-by-2030/>

- **Biodiversity, flora and fauna** - habitats and species are likely to continue to be protected through European and UK legislation. England's wildlife habitats have become increasingly fragmented and isolated, leading to declines in the provision of some ecosystem services, and losses to species populations'. Lawton (2010) recognises that future climate change, demographic change, economic growth, new technologies, societal preferences and changes in policy and regulatory environments may all have profound consequences⁵⁶. However, new legislation such as the Environment Bill is likely to continue protection of biodiversity by providing a framework for a legally binding target of net gain within the planning system.
- **Population and human health** – water available for consumptive use may be affected by climate change whereby access to water is limited through more frequent droughts or floods. Population is projected to increase in the region and life expectancy is also higher than the nation average meaning that the numbers of elderly residents are likely to increase. As such, water demand will increase, and further pressure will be placed on water resources within the region.
- **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.
- **Landscape** – changing and continued development will affect the quality and character of landscapes.
- **Soil** – as the population increases it is likely that more brownfield land will be remediated and developed. There is potential for a loss of agricultural land through development pressures.
- **Historic environment** - Historic England recently reported that heritage assets at risk are decreasing. There are now 87 fewer heritage assets at risks than in 2018 with successes in buildings and structures and archaeology⁵⁷. Historic assets will likely continue to be protected through European and UK legislation. Development could put pressure on heritage assets and their setting.

⁵⁶ Lawton (2010). Making Space for Nature.

⁵⁷ Historic England (2019). Heritage at Risk. Available at: <https://historicengland.org.uk/advice/heritage-at-risk/findings/>

5 Key Environmental Issues and Opportunities

The SEA Directive requires:

‘any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of particular environmental importance, such as areas designated pursuant to Directive 79/409/EEC and 92/43/EEC’

SEA Directive Annex I (d)

5.1 Key issues and environmental opportunities

Determining which SEA topics are relevant to the WRSE regional plan and which should be scoped out (if any) is a key stage in the Scoping process. The SEA topics and the scoping determination for each is presented in Table 5.1. The key issues and opportunities relevant to each topic, which were identified during the Scoping process, are also presented in the table. Topics were scoped in based on the baseline situation and the potential impact of the WRSE regional plan on them. This was assessed by reviewing baseline conditions, current environmental issues for the WRSE regional plan area and an assessment of the likelihood of potential impacts occurring.

Table 5.1: Key issues and opportunities

SEA topic	Scoped in	Implications	Opportunities
Biodiversity, Flora and Fauna	Yes	<p>The WRSE region is rich in habitats and species diversity, and includes national and internationally designated sites including SSSIs, SPAs, SACs, Ramsar sites and MPAs/MCZs.</p> <p>Development of new water infrastructure can directly or indirectly affect designated and non-designated sites, habitats and species through loss of land, disturbance and damage.</p> <p>There is potential for the options within the WRSE regional plan to result in surface and/or groundwater pollution which could have an impact on wildlife.</p> <p>Wetland and marsh habitat rely on water, the WRSE regional plan should ensure that it does not affect these areas through over abstraction and should look for opportunities to reduce abstraction pressure where cost effective and possible.</p>	<p>The WRSE regional plan should ensure that there are no impacts on biodiversity and should look to enhance biodiversity and achieve biodiversity net gain where possible. There are opportunities to include options which result in improvements to the natural environment and biodiversity net gain through habitat creation or enhancement, support Nature Recovery Networks and Strategies, connectivity of ecological networks to increase species resilience and introduction of vegetation to slow run-off and reduce flood risk, amongst others.</p> <ul style="list-style-type: none"> • Protect, conserve and enhance biodiversity • Slow/halt biodiversity losses/declines • Integrate biodiversity into new infrastructure
Water	Yes	<p>Phosphate and physical modifications are the most common pressures affecting the achievement of 'Good' status. The significant water management issues which are most common in affecting the achievement of 'Good' are pollution from wastewater, physical modifications and pollution from town, cities or rural areas. There is potential for the options within the WRSE regional plan to have a negative impact on water quality.</p> <p>Areas of the WRSE region are at high risk of flooding from both surface water and rivers and the sea. There is potential that the options within the WRSE regional plan could be affected by or contribute to an increased risk of flooding.</p>	<p>The WRSE regional plan should avoid options which have a negative impact on water quality or ecology. Options which reduce pressures on the water environment should be explored. WFD will be considered during the optioneering process to contribute to the selection of options which could lead to WFD improvements or avoid WFD deterioration.</p> <p>The WRSE regional plan has the opportunity to improve the environment by leaving more water in the region's rivers, streams and underground sources.</p> <p>The options within the WRSE regional plan should avoid areas at high risk of flooding and, where appropriate, implement measures to reduce flood risk.</p> <ul style="list-style-type: none"> • Ensure the protection, improvement and sustainable use of water bodies

SEA topic	Scoped in	Implications	Opportunities
			<ul style="list-style-type: none"> ● Avoid, control or reduce water pollution ● Leave more water in the natural environment ● Reduce or mitigate flood risk
Soil	Yes	<p>Agriculture has a dominant role in the landscape of the WRSE region. Agriculture land of Grade 2 and 3 are the most common across the region.</p> <p>The options within the WRSE regional plan have the potential to result in a loss of agricultural land or through a reduction in water availability for agricultural processes. There is also potential for soil contamination through the construction phase.</p>	<p>Soil is an important natural resource and as such the WRSE regional plan should consider the impact of options on the soil stocks and avoid options which have significant negative effects. The options within the WRSE regional plan should avoid impacts on agricultural land of Grade 1 and 2 if possible, and mitigation should be included where impacts are unavoidable. There are opportunities for the options to positively affect agriculture, for example options to increase raw water storage and supply.</p> <ul style="list-style-type: none"> ● Protect and retain soil stocks and high value agricultural land ● Ensure soils are protected from contamination ● Protect and enhance soil health ● Use land efficiently
Air	Yes	<p>Air quality in the region is varied. Generally, it is good, however there are some areas designated as AQMAs. Air pollution sources include transport and industry.</p> <p>The options within the WRSE regional plan have the potential to impact air quality. This could include the generation of air pollutants from treatment plants and there is also likely to be effects from the construction phase.</p>	<p>There is potential for the WRSE regional plan to mitigate any increases in air pollutants as a result of the options and improve air quality in the region.</p> <ul style="list-style-type: none"> ● Improve air quality
Climatic Factors	Yes	<p>The WRSE region is projected to have hotter and drier summers, and wetter and warmer winters. Extreme weather events are also predicted to occur as a result of climate change. There is potential that this could affect water availability through increases in periods of drought.</p>	<p>The WRSE region has the opportunity to consider the impact of climate change within the option selection process. Measures to increase the resilience of the option to a changing climate could also be considered. The options should also consider the impact on climate change through the optioneering and design processes.</p>

SEA topic	Scoped in	Implications	Opportunities
		There is also potential for options within the WRSE regional plan to result in carbon emissions during the construction and operation phase which will further contribute to climate change.	<p>The regional plan has the opportunity to address the impacts of climate change on demand for water and how much is available, and to increase the region's resilience to severe drought and other extreme events and stresses.</p> <ul style="list-style-type: none"> ● Increase resilience to climate change, including the resilience of resource, infrastructure and the environment ● Reduce contribution to climate change
Population, Communities and Human Health	Yes	<p>There are approximately 19 million people living within the WRSE Region, which accounts for 30% of the UK's population. Population is expected to grow which will likely place additional pressure on the water environment within the WRSE region. Economic growth and climate change will also add to this pressure. Health within the region is generally good.</p> <p>The options within the WRSE regional plan have the potential to result in temporary disturbance effects during the construction phase. There is also potential for impacts on the water or natural environment which could have impacts on recreation and wellbeing.</p>	<p>There is an opportunity for the WRSE regional plan to engage with the local community. The WRSE regional plan could also look to maximise opportunities for recreation through enhancing access and the condition of the water environment, greenspaces or areas of the natural environment. Thus, improving the inclusivity of and connection to the local natural environment.</p> <p>The WRSE regional plan also has the opportunity to ensure a resilient and reliable water supply for customers now and in the future, ensuring there is enough water for a growing population and to support economic growth.</p> <ul style="list-style-type: none"> ● Prevent disturbance effects for the local community ● Enhance the natural environment for recreation purposes ● Improve access to the natural environment for all members of the community ● Provide a resilient and reliable water supply for customers
Historic Environment	Yes	<p>The WRSE region is rich in heritage and contains many listed buildings, conservation areas, scheduled monuments, and registered parks and gardens, amongst others.</p> <p>The options within the WRSE regional plan have the potential to directly or indirect impact the historic environment through effecting the asset's fabric or setting.</p>	<p>The options within the WRSE regional plan should consider the historic environment and minimise adverse effects.</p> <ul style="list-style-type: none"> ● Protect archaeology ● Careful consideration to the siting of options to reduce effects on historic assets and their setting ● Encourage public awareness through promoting heritage sites

SEA topic	Scoped in	Implications	Opportunities
Landscape	Yes	<p>The WRSE region's landscape is diverse and there are important landscapes within the region, including two National Parks and eight AONB.</p> <p>There is potential for the options within the WRSE regional plan to have an impact on the landscape. This could include temporary construction effects and permanent effects associated with infrastructure which could affect visual amenity or the character of the area.</p>	<p>Consideration of the impacts of the landscape should be considered as part of the option development. There is potential for the WRSE regional plan to enhance the landscape. This may involve selecting certain materials or colours for the option or through planting or habitat creation.</p> <ul style="list-style-type: none"> ● Ensure the protection or enhancement of landscape character
Material Assets	Yes	<p>The WRSE region contains important transport links which could be affected during construction works. There is also significant water and wastewater treatment infrastructure across the region, operated by the six water companies within WRSE. The region also produces and manages a significant amount of waste and there are over 400 authorised landfill sites.</p> <p>The WRSE regional plan has the potential to increase the use of resources within the region and result in the generation of waste.</p>	<p>The WRSE regional plan has the opportunity to consider the use of resources within the option development and reduce the use of energy, materials and prevent waste generation.</p> <ul style="list-style-type: none"> ● Reduce resource use ● Minimise waste generation ● Avoid impacts on the transport network

6 SEA Framework

6.1 SEA objectives and assessment criteria

A key part of the SEA Scoping process is the development of the SEA Framework. The SEA Framework forms the basis for predicting and assessing the effects arising from the implementation of the WRSE regional plan. The Framework will be used to assess the individual options and the alternative programmes for the regional plan. An overarching set of SEA objectives and assessment questions to guide the assessment have been developed, as shown in Table 6.1. These are linked to the SEA Directive topics, the key priorities for WRSE and have been informed by a review of the SEA objectives used for WRMP19 by the six water companies' within WRSE. The results of the HRA and WFD assessments will feed into the SEA objectives on biodiversity and water.

The SEA assessment will also consider the impacts on natural capital stocks that cannot be incorporated within the Natural Capital metric due to uncertainty in the accuracy of monetisation of benefits. These impacts will be assessed qualitatively and incorporated into the score for the relevant SEA objective.

The overarching objectives also have the potential to be used as a framework for WRMP24, where water companies can cross-reference the regional plan SEA objectives. This would allow for a consistent approach tailored to individual water companies where objectives could be scoped in or out of the WRMP process but also be aligned to the regional plan. It is recognised that certain objectives or sub-themes will involve water company wide considerations rather than just option specific, for example how water companies are sourcing power from renewables. This detail will be considered at the WRMP24 level and agreed assumptions used for the regional plan.

Table 6.1: Proposed SEA framework

SEA Topic	Proposed SEA Objective	Assessment Questions/Sub-Themes
Biodiversity, flora and fauna	Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	<ul style="list-style-type: none"> ● Is the option likely to affect the conservation status of any SPA, SACs, Ramsar sites, SSSI or locally designated sites? ● Will the option protect and enhance aquatic and habitats and species, including freshwater fisheries and chalk rivers? ● Will the option affect the marine environment, habitats and species (including MCZs and MPAs)? ● Is the option likely to affect ancient woodland, Biodiversity Action Plan (BAP) habitats and/or protected and BAP species? ● Will the option affect any habitats that support legally protected species or species of conservation concern? ● Is there potential for contribution to achieving 'favourable' conservation status or for creation of new BAP habitats? ● Is the option likely to have an impact on a current or future Nature Recovery Network? ● Are there any opportunities for habitat creation or restoration? ● Will the option contribute to the loss or gain in habitat connectivity? ● Is there a possibility for INNS to be spread/ introduced or for algal blooms to occur? ● Is there an opportunity to improve biodiversity value through removal of INNS?
Soil	Protect and enhance the functionality, quantity and quality of soils	<ul style="list-style-type: none"> ● Will the option affect high grade agricultural land? ● Will the option promote the efficient use of land? ● Will the option prevent soil erosion and retain soil stocks as a natural resource? ● Will the option promote soil health? ● Will the option involve use of brownfield or greenfield land? ● Will the option prevent mineral sterilisation? ● Will the option affect soil contamination or involve remediation? ● Is the option likely to affect geodiversity, including SSSIs of geological importance?
Water	Increase resilience and reduce flood risk	<ul style="list-style-type: none"> ● Is the option vulnerable to flood risk?

SEA Topic	Proposed SEA Objective	Assessment Questions/Sub-Themes
		<ul style="list-style-type: none"> ● Will the option contribute to the risk of flooding?
	Protect and enhance the quality of the water environment and water resources	<ul style="list-style-type: none"> ● Will the option affect surface water quality or quantity? ● Will the option affect ground water quality or quantity? ● Is the option likely to contribute to or conflict with the achievement of WFD objectives? ● Will the option affect bathing waters? ● Will the option affect shellfish water protected areas? ● Will the option affect chalk rivers? ● Will the option affect raw water quality? ● Will the option reduce the flashy nature of surface waters? ● Will the option slow the flow in upper catchments and reduce soil losses to river systems?
	Deliver reliable and resilient water supplies	<ul style="list-style-type: none"> ● Does the option provide a reliable and sustainable water supply which meets changing demand? ● Will the option protect and enhance the environmental resilience of the water environment to climate change, flood risk and drought?
Air	Reduce and minimise air emissions	<ul style="list-style-type: none"> ● Is the option in an air quality management area (AQMA)? ● Will the option affect local air quality?
Climatic Factors	Reduce embodied and operational carbon emissions	<ul style="list-style-type: none"> ● Will the option affect carbon or other greenhouse gas (GHG) emissions? ● Is there potential for the option to incorporate climate mitigation measures to reduce its carbon footprint, such as lower embodied carbon or incorporating renewable energy? ● Will the option affect carbon sequestration?
	Reduce vulnerability to climate change risks and hazards	<ul style="list-style-type: none"> ● Is the option vulnerable to climate change effects? ● Does the option include climate resilience measures? ● Will the option create catchment resilience to drought?

SEA Topic	Proposed SEA Objective	Assessment Questions/Sub-Themes
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	<ul style="list-style-type: none"> ● Will the option have an effect on the character of the landscape, townscape or seascape, including tranquillity and views? ● Will the option improve access to the countryside? ● Will the option create or improve green infrastructure which contributes to access to the landscape? ● Will the option protect and enhance designated landscapes and features?
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	<ul style="list-style-type: none"> ● Will the option affect designated or non-designated historic assets, sites and features? ● Will the option affect the setting and/or significance of a historic asset? ● Will the option affect archaeology (including unknown archaeology)? ● Will the option affect heritage assets at risk? ● Will the option affect conservation areas or historic landscape/townscape areas?
Population and Human Health	Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	<ul style="list-style-type: none"> ● Does the option promote water efficiency and encourage a reduction in water consumption? ● Will the option secure resilient water supplies for the health and wellbeing of customers? ● Will the option allow for economic development? ● Will the option allow for economic diversity? ● Will the option have an effect on active lifestyles, such as impacts on active travel through disruption to pedestrian and cycle routes? ● Will the option affect Public Rights of Way? ● Will the option affect road or rail infrastructure? ● Will the option minimise disturbance from noise, light, visual, and transport? ● Will the local communities have been actively engaged to foster an inclusive environment and participate in decision making?
	Maintain and enhance tourism and recreation	<ul style="list-style-type: none"> ● Will the option maintain or enhance tourism? ● Does the option improve access to the natural environment for recreation, including those living within deprived areas? ● Will the option have an effect on freshwater fisheries for recreational purposes?

SEA Topic	Proposed SEA Objective	Assessment Questions/Sub-Themes
		<ul style="list-style-type: none"> ● Will the option have an effect on marine fisheries for recreational purposes?
Material Assets	Minimise resource use and waste production	<ul style="list-style-type: none"> ● Will the option reuse existing infrastructure? ● Will the option minimise the use of resources? ● Will the option reduce the production of waste?
	Avoid negative effects on built assets and infrastructure	<ul style="list-style-type: none"> ● Will the option affect built assets and infrastructure, including transport infrastructure?

6.2 Compatibility of SEA objectives

The development of SEA objectives based on environmental, social and economic issues means that it is likely not all of the objectives will relate or be compatible. Objectives which cover economic issues may sometimes conflict with environmental objectives, and vice versa, for example. A compatibility assessment of the SEA objectives is presented in Table 6.2, and demonstrates any potential conflicts and uncertainties between the SEA objectives.

The following key has been used to illustrate the SEA objectives compatibility:

+	Objectives are compatible
-	Objectives are potentially incompatible
0	Objectives are not related
/	Uncertainty over relationship

Table 6.2: SEA objectives compatibility matrix

1. Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)															
2. Protect and enhance the functionality, quantity and quality of soils	+														
3. Increase resilience and reduce flood risk	+	+													
4. Protect and enhance the quality of the water environment and water resources	+	+	+												
5. Deliver reliable and resilient water supplies	+	+	+	+											
6. Reduce and minimise air emissions	+	0	+	+	+										
7. Reduce embodied and operational carbon emissions	+	+	+	+	+	+									
8. Reduce vulnerability to climate change risks and hazards	+	+	+	+	+	+	+								
9. Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	+	+	+	+	0	+	+	+							
10. Conserve, protect and enhance the historic environment, including archaeology	0	+	+	+	0	+	+	+	+						
11. Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	+	+	+	+	+	+	+	+	+	+					
12. Maintain and enhance tourism and recreation	+	+	+	+	+	+	0	+	+	+	+				
13. Minimise resource use and waste production	+	+	+	+	+	+	+	+	0	0	+	+			
14. Avoid negative effects on built assets and infrastructure	0	+	+	0	0	0	0	+	+	+	+	+	+	+	
	1. Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	2. Protect and enhance the functionality, quantity and quality of soils	3. Increase resilience and reduce flood risk	4. Protect and enhance the quality of the water environment and water resources	5. Deliver reliable and resilient water supplies	6. Reduce and minimise air emissions	7. Reduce embodied and operational carbon emissions	8. Reduce vulnerability to climate change risks and hazards	9. Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	10. Conserve, protect and enhance the historic environment, including archaeology	11. Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	12. Maintain and enhance tourism and recreation	13. Minimise resource use and waste production	14. Avoid negative effects on built assets and infrastructure	

6.3 Compatibility of SEA objectives with WRSE regional plan objectives

It is important that the objectives developed for the WRSE regional plan are compatible with the SEA objectives. A compatibility assessment of the SEA and WRSE regional plan objectives is presented in Table 6.3.

The following key has been used to illustrate the objectives compatibility:

+	Objectives are compatible
-	Objectives are potentially incompatible
0	Objectives are not related
/	Uncertainty over relationship

The compatibility matrix demonstrates that the SEA and WRSE regional plan objectives are compatible with one another. However, there is potential for tension between the objective to ensure there is enough water to support a growing population and economic growth, and the objective to protect and enhance biodiversity and vulnerable habitats. However, the aim of the plan and environmental assessment is to protect and enhance the environment, therefore, the plan shouldn't conflict with ecological objectives.

Table 6.3: SEA and WRSE regional plan objectives compatibility matrix

	WRSE regional plan			
	Ensure there is enough water for a growing population and to support economic growth	Improve the environment by leaving more water in the region's rivers, streams and underground sources	Increase the region's resilience to severe drought and other extreme shocks and stresses	Address the impacts of climate change on demand for water and how much is available
1. Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible)	/	+	+	+
2. Protect and enhance the functionality, quantity and quality of soils	+	+	+	+
3. Increase resilience and reduce flood risk	+	+	+	+
4. Protect and enhance the quality of the water environment and water resources	+	+	+	+
5. Deliver reliable and resilient water supplies	+	+	+	+
6. Reduce and minimise air emissions	+	+	+	+
7. Reduce embodied and operational carbon emissions	+	+	+	+
8. Reduce vulnerability to climate change risks and hazards	+	+	+	+
9. Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	+	+	+
10. Conserve, protect and enhance the historic environment, including archaeology	0	+	0	0
11. Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	+	+	+	+
12. Maintain and enhance tourism and recreation	+	+	+	+
13. Minimise resource use and waste production	+	+	+	0

SEA objectives

WRSE regional plan

14. Avoid negative effects on built assets and infrastructure	0	+	0	0
---------------------------------------------------------------	---	---	---	---

7 Proposed Environmental Assessment Methodology

7.1 Introduction

To determine the environmental effects of the options and alternatives programmes, the following staged assessment process is proposed:

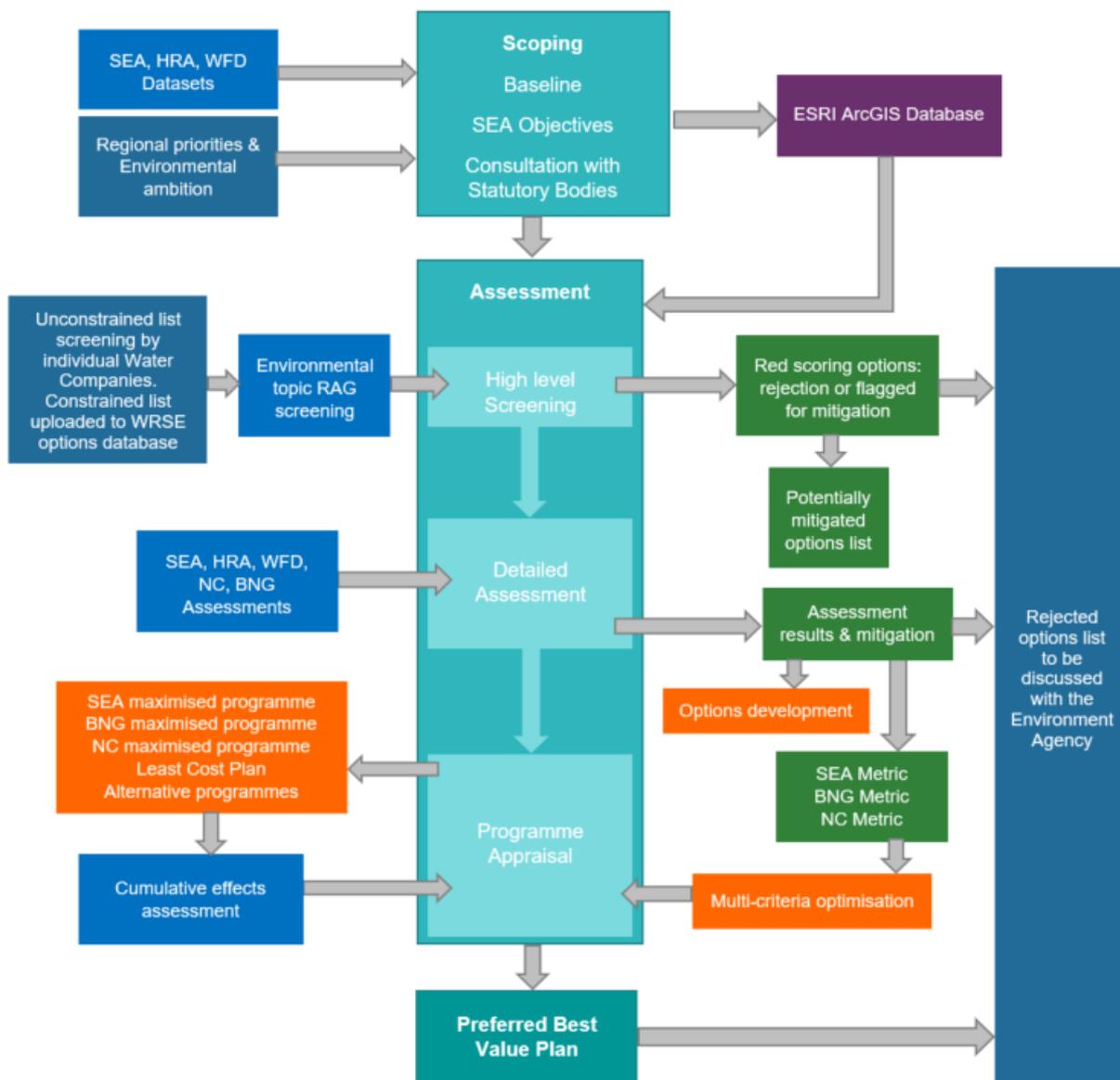
- A high-level environmental screening assessment
- Detailed options-level assessment (including SEA, HRA, WFD, Natural Capital, BNG, and INNS assessments)
- Programme Appraisal – including cumulative and in-combination effects for SEA, HRA, WFD, natural capital, BNG, and INNS.

This chapter sets out a summary of the proposed assessment methodology in relation to the SEA. The full regional plan environmental assessment method guidance document is available at:

https://www.wrse.org.uk/media/lb0g0tsr/wrse_file_1347_wrse-regional-plan-environmental-assessment-methodology-guidance.pdf

Figure 7.1 presents a diagram of the overarching environmental assessment approach. It shows the key interactions between the environmental assessment and the options decision-making and plan development as part of an integrated and iterative process. The final WRSE regional plan (the Best Value Plan) will be a framework for member water companies WRMP24.

Figure 7.1: Environmental Method Integration with Options Decision-Making and Plan Development



7.2 High-level screening

The high-level screening will be undertaken using a Red-Amber-Green (RAG) approach against the SEA topics to flag high environmental risk options. The criteria outlined in Table 7.1 will be used to provide an overview assessment for the SEA and validation exercise for the water companies unconstrained to constrained list screening. The criteria were based on WRSE water company WRMP19s and updated as appropriate. It should be noted that the RAG screening is a pre-cursor to the SEA, HRA and WFD assessments (not part of the processes themselves).

The high-level screening only includes key datasets such as those covered by legislation or that are nationally important. Other datasets will be included in the detailed assessment which will also include looking at wider effects such as pathways. Options screened as red will be reviewed using professional

judgement and only those with unacceptable risks that cannot be mitigated will be recommended for rejection.

Table 7.1: Proposed RAG criteria and definitions

Topic	Dataset	Features	RAG criteria		
			Red	Amber	Green
Air Quality	Air quality management areas (AQMAs)		No criteria	Within 500m of an AQMA (potential for significant effect) and/or moderate/minor adverse effects on linkages to designated sites, and/or their qualifying features.	Over 500m from an AQMA (low potential for significant effect). No adverse effects on linkages to designated sites, and/or their qualifying features.
Biodiversity, Flora and Fauna	Statutory designated sites	Special areas of conservation (SAC), Special protection area (SPA), RAMSAR ⁵⁸	Less than 400m from designated site and/or major adverse effects on linkages to designated sites, and/or their qualifying features.	Within 400m to 5000m of a designated site and/or moderate/minor adverse effects on linkages to designated sites, and/or their qualifying features.	Over 5000m from a designated site. No adverse effects on linkages to designated sites, and/or their qualifying features.
		Sites of special scientific interest (SSSI)	Direct effect/encroachment upon from SSSI and/or major adverse effects on linkages to designated sites, and/or their qualifying features.	Within a SSSI Impact Risk Zone (IRZ) and/or moderate/minor adverse effects on linkages to designated sites, and/or their qualifying features.	Outside a SSSI IRZ. No adverse effects on linkages to designated sites, and/or their qualifying features.
	Non statutory designated sites	Ancient Woodland	Encroaching upon Ancient Woodland	Within 500m of an Ancient Woodland	Over 500m from an Ancient Woodland
		National Nature Reserves	Not Applicable	Encroachment upon NNR	Within 500m from a National Nature Reserve
		Local Nature Reserves	Not Applicable	Encroachment upon LNR	Within 500m from a Local Nature Reserves
Priority habitats and Irreplaceable undesignated habitats	Direct Land take from Priority habitats and Irreplaceable undesignated habitats such as chalk heath & ancient Woodland		Within 500m of undesignated priority habitats and Irreplaceable undesignated habitats.	Over 500m from undesignated priority habitats and Irreplaceable undesignated habitats.	
Historic Environment		Listed buildings	Direct effect on heritage sites or assets	Within 500m of heritage site or feature	Over 500m from heritage site or feature
		Scheduled monuments			

⁵⁸ The RAG screening is a pre-cursor to the various environmental assessments including the HRA Test of Likely Significance. Therefore, the RAG criteria in the table should not be taken as the HRA Test of Likely Significance parameters. These have been developed in a separate HRA method statement in Appendix F and will be discussed and agreed with Natural England.

Topic	Dataset	Features	RAG criteria		
			Red	Amber	Green
	Statutory designated sites	Conservation Area			
	Non statutory designated sites	Registered Parks and Gardens and Battlefields			
Landscape	Statutory Designations	Areas of outstanding natural beauty (AONB)	Encroachment upon AONB or National Park	Within 500m of an AONB or National Park	Over 500m from an AONB or National Park
		National Park			
Geology and soils	Agriculture land classification		Within Grade 1 or 2 land classification (likely significant effect) and/or major adverse effects on linkages to sites, and/or their qualifying features	Within Grade 3 land classification (potential for significant effect) and/or moderate/minor adverse effects on linkages to designated sites, and/or their qualifying features.	Within other or unclassified land (low potential for significant effect). No adverse effects on linkages to designated sites, and/or their qualifying features.
	Landfill sites		Directly through authorised landfill site (likely significant effect).	Within 500m of an authorised landfill site and/or directly through historic landfill site (potential for significant effect).	Over 500m from an authorised landfill site (low potential for significant effect).
Water	Groundwater	Groundwater source protection zones	Within Zone 1	Within Zone 2	Within Zone 3
		Nitrate Vulnerable Zone	Within a Nitrate Vulnerable Zone	Not Applicable	Outside a Nitrate Vulnerable Zone
	Surface water	Flood risk zones	Within Flood Risk Zone 3	Within Flood Risk Zone 2 or 2/3	Within Flood Risk Zone 1

7.3 Detailed assessment

The detailed SEA assessment will be carried out using the SEA Framework outlined in Table 6.1. Each SEA objective has a set of defined datasets and a defined scoring system using a qualitative scale of minor, moderate, major positive and minor, moderate, major negative, and neutral. The effects of each option will be assessed using this scale and a narrative justification. The datasets and scoring definitions are presented in Appendix E.

The results of the HRA and WFD assessments will feed into the SEA objectives on biodiversity and water. A specific HRA method statement has been developed which outlines the stages of the HRA process for the regional plan including the HRA Test of Likely Significance, Appropriate Assessment, and Consideration of Alternatives. The HRA method statement can be found in Appendix F.

An ESRI ArcGIS tool has been developed to store most of the environmental data and will be used to identify the key constraints and opportunities for each option and then professional judgement will be applied to score the option using the scoring method in Appendix E. The assessment will be split into construction effects and operational effects as these may be quite different and would not provide an accurate picture if they were combined. An option may have both positive and negative effects under a SEA objective. Rather than trading these effects to cancel each other out, both positive and negative scoring will be used to show there are potential mixed effects.

Potential mitigation and enhancement measures will also be identified as part of the assessment process and fed back to the options development team as part of an iterative process. Options with major and moderate negative effects will need to include appropriate mitigation or be flagged for rejection.

The multi-criteria optimisation approach set out in the new draft Environment Agency guidance reflects the proposed approach for WRSE, where the outcomes of the environmental assessments are translated into metrics to feed into the multi-criteria optimisation for options selection and the programme appraisal. The results of the SEA option-level assessment will be translated into the following metrics:

- SEA metric positive
- SEA metric negative

As outlined in the WRSE Environmental Method Guidance (Mott MacDonald, July 2020) a BNG metric and natural capital metric will also be produced.

By its nature SEA does not include numerical values for scoring effects. However, in order to incorporate environmental considerations directly into the programme appraisal optimisation model, SEA metrics will be developed to summarise the environmental performance of each option in numerical form. The SEA metrics will be developed from the results of the SEA, HRA and WFD assessment processes, and will also include non-monetised natural capital. However, the metric itself will be generated solely for the investment modelling and will not be used in the SEA process for the options assessment or the programme appraisal.

There is no current guidance on how this should be done, therefore, three possible approaches were reviewed and presented for discussion in the method guidance document. The preferred approach is set out below. The metric will be based on the option (including embedded mitigation) results and include construction and operation effects combined.

To generate the SEA metric(s), the SEA scoring system is given pronounced numerical values e.g. major positive = +8, moderate positive = +4, minor positive = +1, neutral = 0 (and -1 to -8 for corresponding negative effects), to counteract hidden effects. Two metrics are developed, one for positive effects and one for negative effects. The positive results are summed and the negative results are summed to give the two metrics. The advantages of this approach are that it is straightforward and easy to understand, and it avoids the trading and cancelling out of effects. It also has the additional advantage of alleviating some of the issues of hidden significant effects and cumulative minor effects.

The metrics provided will need to be normalised into a defined scale (e.g. 0 – 10) so that the option scores can be compared against each other. When running the investment model it would also allow runs to be calibrated according to those options that provide the most benefits or to exclude options with the highest environmental risk.

7.4 Programme appraisal

It is proposed that the four environmental metrics for each option are included in the options input template with the other data that will be uploaded into the investment model. When running the model this will enable:

- Programmes (combinations of options) to be identified based on environmental parameters
- Identification of the environmental effects of alternative programmes selected

It is acknowledged that there is a risk of simplification of actual positive and negative effects from combining the SEA results into just two metrics. The programme appraisal will review potential biases and consider near alternatives and actual positives and negatives to ensure effects aren't being masked by the metrics.

The alternative programmes generated will be fed back into the environmental assessment process and the cumulative effects of the alternative programmes assessed using the SEA Framework. Due to the nature of SEA, an SEA metric for each programme would not be generated. Instead the standard SEA process would be followed whereby the qualitative effects (using the major to minor effect scale) would be identified for each programme.

For the BNG and natural capital assessments a BNG net gain or loss score and a natural capital valuation for each programme will be generated, allowing the merits of alternative programmes to be compared. During the programme appraisal the HRA Appropriate Assessment and WFD assessment would be undertaken if required. The programme appraisal will be an iterative process, where the results of the environmental assessments are fed back into updated iterations of the plan.

7.5 Effects outside the WRSE boundary

There is potential for effects outside the WRSE region, for example, from transfer of water outside the regional plan area or from options close to the plan boundary with potential pathways affecting receptors outside the plan area. The baseline GIS database will include a buffer around the regional plan area so that additional receptors (such as designated sites) are captured and can be included in the assessment.

SROs that are wholly or partially covered by the WRSE region will be included in the assessment. For those SROs only partially within the WRSE area, the whole options will be assessed, and the GIS database expanded to cover these areas.

7.6 Influencing the development of the WRSE regional plan

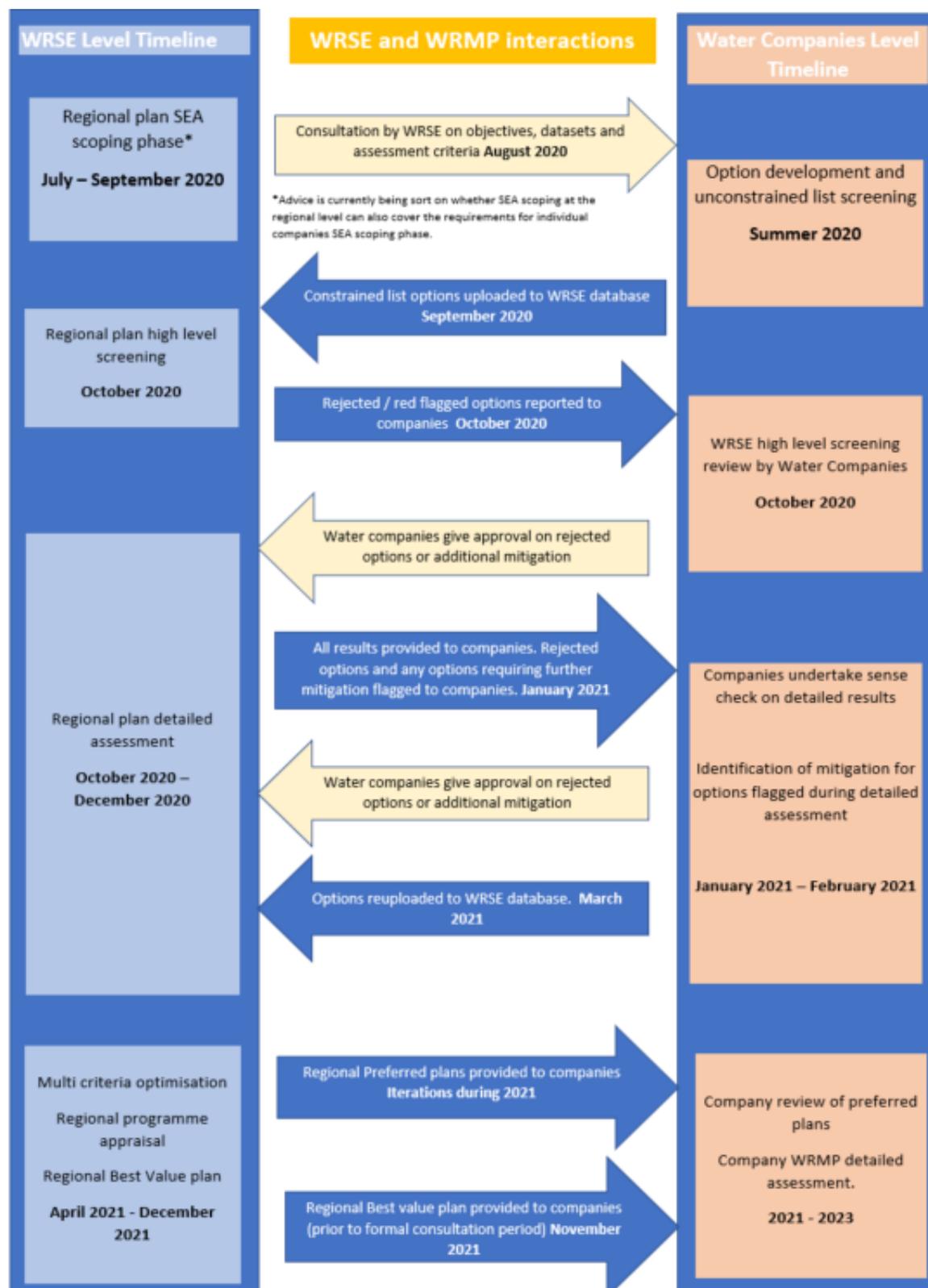
As presented in the method sections above the SEA will be an ongoing and iterative process throughout the regional plan development. However, there are three key decision-points for influencing the plan:

- The high-level screening will flag options with potentially unacceptable environmental risks that cannot be mitigated, and these options may be rejected. It will also flag options with significant environmental risks that will need mitigation including in the option design.
- The options-level SEA will assess the positive and negative effects of each option and will identify possible mitigation and enhancement measures that will be fed back to the options design teams. Options with major or moderate negative effects will need appropriate mitigation in order for them to be taken forward into the investment model. Opportunities to maximise benefits will also be considered with the design teams.
- The environmental metrics (translated from the assessment results) will be included in the investment modelling to influence the alternative programmes identified in the model. Once the programmes are identified individual options within them will be reviewed and the cumulative effects assessed. If major or moderate negative cumulative effects are identified additional mitigation will be needed or alternative options or programmes will need to be considered. Opportunities to maximise programme-wide benefits will also be considered.

7.7 Relationship between the WRSE regional plan and WRMP24

It is anticipated that the WRSE regional plan environmental assessments including the SEA will be used as a framework for the WRSE member water companies when undertaking their WRMP24 statutory environmental assessments. A large amount of the supporting information required for WRMP24 will be produced as part of the regional plan environmental assessments which will be available for use by the individual water companies. Figure 7.2 show the interactions between the two processes and information that will be shared from the regional plan environmental appraisal to support the water company WRMP24 development process. The approach aims to reduce the amount of work individual water companies need to undertake during WRMP24, streamline the environmental assessment process, and ensure consistency across water company environmental assessments.

Figure 7.2: Interactions and Information Exchange between the WRSE assessment and WRMP process



8 Consultation and Next Steps

8.1 SEA scoping consultation

The SEA Scoping Report will be issued for a formal five-week consultation period in September 2020 to the three statutory bodies: The Environment Agency, Natural England and Historic England, as well as being made available to wider stakeholders.

At this stage WRSE would welcome your views on the SEA Scoping Report including the following key questions:

1. Are there any additional plans or programmes at the international, national, regional or local level which have been excluded from the plans and programmes review, which your organisation thinks are relevant to the WRSE regional plan SEA?
2. Do you have any comments on the baseline information presented or any additional baseline information you think would be useful?
3. Do you have any comments on the key issues and opportunities identified?
4. Do you have any comments on the proposed SEA objectives and assessment questions/sub-themes?
5. Do you have any comments on the high-level screening RAG criteria and definitions and/or the SEA objectives scoring criteria
6. Do you have any other comments on the scoping report?

You can respond to the questions online at (<https://wrse.uk.engagementhq.com/strategic-environmental-assessment-scoping-report>) where there is a dedicated survey set up or email contact@wrse.org.uk

Following the Scoping Report consultation period, all consultation responses will be carefully reviewed and tabulated, and taken into account as far as possible. Details of how the scoping stage consultation has been taken into account, alongside the results of the SEA assessment, will be presented in the Environmental Report.

8.2 Next steps

Following the Scoping consultation, SEA Stage B (the assessment stage – see Figure 1.1 and Appendix A) will be undertaken. The options within the WRSE regional plan and the cumulative effects will be assessed against the SEA objectives in line with the methodology presented in Chapter 7). The results will be presented in the SEA Environmental Report. The proposed structure and content of which is set out in Table 8.1.

Table 8.1: Environmental Report – proposed structure and content

Structure of the Environmental Report	Information to include
Non-technical summary	<ul style="list-style-type: none"> ● Summary of the SEA process ● Summary of the likely significant effects of the Plan ● Statement on the difference the process has made to date

Structure of the Environmental Report	Information to include
	<ul style="list-style-type: none"> • How to comment on the report
Methodology used	<ul style="list-style-type: none"> • Approach adopted in the SEA • Who was consulted and when • Difficulties encountered in compiling information or carrying out the assessment
Background	<ul style="list-style-type: none"> • Purpose of the SEA • Objectives and context of the WRSE regional plan
SEA Objectives, Baseline and Context	<ul style="list-style-type: none"> • Summary of the scoping stage: <ul style="list-style-type: none"> – Plans and programmes review and implications for the WRSE regional plan and SEA – Description of the baseline characteristics and the predicted future baseline – Environmental issues and opportunities – Limitations of the data, assumptions made – SEA Framework
WRSE Regional Plan Options Assessment	<ul style="list-style-type: none"> • Description of options • Assessment of environmental effects • Proposed mitigation measures and enhancement opportunities
WRSE Regional Plan Programme Appraisal and Cumulative Assessment	<ul style="list-style-type: none"> • Assessment of alternative programmes and cumulative effects • Uncertainties and risks
Implementation	<ul style="list-style-type: none"> • Links to other tiers of plans and programmes and the project level • Proposals for monitoring

The SEA Environmental Report will be issued for public consultation alongside the draft WRSE regional plan in January 2022. Comments received on the SEA will be recorded in a log and addressed in the final SEA Environmental Report. Any significant alterations to the WRSE regional plan as a result of the consultation will be assessed in terms of their environmental implications and influence on the revision of the WRSE regional plan. The final SEA Environmental Report will be amended as necessary to reflect any changes.

Following adoption of the WRSE regional plan, a Post-Adoption statement will be produced which outlines how the SEA process has influenced the development of the WRSE regional plan, how consultation comments were taken into consideration and how the WRSE regional plan will be monitored. This summary will provide enough information to make it clear how the WRSE regional plan was influenced (if at all) as a result of the SEA process and consultation.

Stage E 'Monitoring implementation of the plan' of the SEA process will be carried out by WRSE. It is likely that monitoring of the WRSE regional plan will be incorporated with the annual monitoring process. Monitoring proposals will be developed as part of the SEA process and presented in the SEA Environmental Report.

9 References

Campaign for Rural England (2015). Give Peace a Chance. [online] Available at:

<https://www.cpre.org.uk/wp-content/uploads/2019/11/CPRE - Give peace a chance - May 2015.pdf> [Accessed August 2020]

Campaign for Rural England (2007). Map of Tranquillity. [online] Available at:

https://www.cpre.org.uk/wp-content/uploads/2019/11/tranquillity_map_england_regional_boundaries_1.pdf [Accessed August 2020]

Department for Communities and Local Government (2005). *A Practical Guide to the Strategic Environmental Assessment Directive*. [online]. Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf [Accessed August 2020]

Department for Environment, Food and Rural Affairs and Environment Agency (2015). *Part 1: Thames River Basin District – River Basin Management Plan*. [online] Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718342/Thames_RBD_Part_1_river_basin_management_plan.pdf [Accessed September 2020]

Department for Environment, Food and Rural Affairs and Environment Agency (2015). *Part 1: South East River Basin District – River Basin Management Plan*. [online] Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718337/South_East_RBD_Part_1_river_basin_management_plan.pdf [Accessed September 2020]

Department for Environment, Food and Rural Affairs (2020). *Agricultural facts: overview of agricultural activity in the South East (including London)*. [online] Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/866815/regionalstatistics_southeast_20feb20.pdf [Accessed August 2020]

Department for Environment, Food and Rural Affairs (undated). *National Air Quality Objectives*. [online]

Available at: https://uk-air.defra.gov.uk/assets/documents/National_air_quality_objectives.pdf [Accessed August 2020]

Department for Environment, Food and Rural Affairs (undated). *List of Local Authorities with AQMAs*.

[online]. Available at: <https://uk-air.defra.gov.uk/aqma/list> [Accessed August 2020]

Department for Environment, Food and Rural Affairs (2019). *Statistics on waste managed by local authorities in England in 2018/19*. [online] Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906559/201819_LA_collected_waste_mgt_annual_Stats_Notice_FINAL_Accessible_rev_v11.pdf [Accessed August 2020]

Department for Business, Energy and Industrial Strategy (2020). *UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018*. [online] Available at:

<https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018> [Accessed August 2020]

- Environment Agency, Natural Resources Wales, Defra, OFWAT (2016) *Final Water Resource Planning Guideline*. [online]. Available at: <https://naturalresources.wales/media/678424/ea-nrw-and-defra-wg-ofwat-technical-water-resources-planning-guidelines.pdf> [Accessed August 2020]
- Environment Agency (2013). *Water Stressed Areas – Final Classification*. [online]. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf [Accessed August 2020]
- Environment Agency (2016). *Thames River Basin District Flood Risk Management Plan 2015 – 2021*. [online] Available at: <https://www.gov.uk/government/publications/thames-river-basin-district-flood-risk-management-plan> [Accessed August 2020]
- Environment Agency (2016). *South East River Basin District Flood Risk Management Plan 2015 – 2021*. [online] Available at: <https://www.gov.uk/government/publications/south-east-river-basin-district-flood-risk-management-plan> [Accessed August 2020]
- Environment Agency (2002). *Dealing with contaminated land in England*. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/313967/dealing_with_contaminated_land_i.pdf [Accessed August 2020]
- Environment Agency (2020). *Permitted Waste Sites - Authorised Landfill Site Boundaries*. [online] Available at: <https://data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permitted-waste-sites-authorised-landfill-site-boundaries> [Accessed August 2020]
- Historic England (2019). *Heritage at Risk*. [online] Available at: <https://historicengland.org.uk/advice/heritage-at-risk/findings/> [Accessed August 2020]
- Lawton (2010). *Making Space for Nature: A review of England's Wildlife Sites and Ecological Network*. [online] Available at: <https://www.gov.uk/government/news/making-space-for-nature-a-review-of-englands-wildlife-sites-published-today> [Accessed August 2020]
- Landscape for Life - The UK's AONBs Overview. [online] Available at: <https://landscapesforlife.org.uk/about-aonbs/aonbs/cotswolds> [Accessed August 2020]
- Met Office (2016). *UK Regional Climates – Southern England*. [online] Available at: <https://www.metoffice.gov.uk/research/climate/maps-and-data/regional-climates/index> [Accessed September 2020]
- Met Office (2018). *United Kingdom Climate Projections 2018 - UKCP18*. [online] Available at: <https://ukclimateprojections-ui.metoffice.gov.uk/> [Accessed August 2020]
- Ministry of Housing, Communities & Local Government (2015). *English indices of deprivation 2015*. [online] Available at: <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2015> [Accessed August 2020]
- Natural England (2014). *National Character Areas*. [online] Available at: <https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making> [Accessed August 2020]
- Natural England. *Areas of Outstanding Natural Beauty: designation and management*. [online] Available at: <https://www.gov.uk/guidance/areas-of-outstanding-natural-beauty-aonbs-designation-and-management> [Accessed August 2020]

- Natural England (2020). Priority Habitat Inventory. [online] Available at: <https://data.gov.uk/dataset/4b6ddab7-6c0f-4407-946e-d6499f19fcde/priority-habitat-inventory-england> [Accessed September 2020]
- NOMIS (2011). *Age structure (KS102EW) for South East and London*. [online] Available at: <https://www.nomisweb.co.uk/census/2011/ks102ew> [Accessed August 2020]
- NOMIS (2011). *Ethnic group (QS201EW) for South East and London*. [online] Available at: <https://www.nomisweb.co.uk/census/2011/qs201ew> [Accessed August 2020]
- ODPM (2005). *Sustainable Communities: Homes for All*. [online] Available at: <http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/documents/corporate/pdf/homes-for-all.pdf> [Accessed August 2020]
- Office of National Statistics (2013). *General Health in England and Wales*. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandwellbeing/articles/generalhealthinenglandandwales/2013-01-30#general-health-across-the-english-regions-and-wales> [Accessed August 2020]
- Office of National Statistics (2019). *Regional economic activity by gross domestic product, UK: 1998 to 2018*. [online] Available at: <https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/regionaleconomicactivitybygrosdomesticproductuk/1998to2018> [Accessed August 2020]
- Office of National Statistics (2020). *Labour market in the regions of the UK: August 2020*. [online] Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/regionallabourmarket/august2020> [Accessed August 2020]
- Office of National Statistics (2020). *Regional labour market: Headline Labour Force Survey indicators for all regions (H100)*. [online] Available at: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/headlinelabourforcesurveyindicatorsforallregionshi00> [Accessed August 2020]
- Public Health England (2019). *Public Health Profiles for South East and London*. [online] Available at: <https://fingertips.phe.org.uk/profile/health-profiles/data#page/0/gid/1938132701/pat/15/par/E92000001/ati/6/are/E12000004/iid/90323/age/201/sex/4/cid/4/page-options/ovw-do-0> [Accessed August 2020]
- Royal Meteorological Society (2020). *State of the UK Climate*. [online] Available at: <https://rmets.onlinelibrary.wiley.com/doi/epdf/10.1002/joc.6726> [Accessed August 2020]
- Transport for the South East (2018). *Economic Connectivity Review*. [online] Available at: <https://transportforthesoutheast.org.uk/wp-content/uploads/2018/07/FINAL-Economic-Connectivity-Review.pdf> [Accessed August 2020]
- UK Government (2005) *Our Future – Different Paths: The UK’s shared framework for sustainable development* [online] Available at: <http://www.sd-commission.org.uk/data/files/publications/050307One%20Future%20-%20Different%20Paths.pdf> [Accessed August 2020]
- UK Government (2018). *A Green Future: Our 25 Year Plan to Improve the Environment*. [online] Available at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/693158/25-year-environment-plan.pdf [Accessed September 2020]

UK Government (2020). *Draft Environment Bill*. [online] Available at:
<https://services.parliament.uk/bills/2019-21/environment.html> [Accessed September 2020]

Visit England (2020). *Great Britain Tourist Annual Report 2019 – London and South East*. [online] Available at: https://www.visitbritain.org/sites/default/files/vb-corporate/gb_tourist_annual_report_2019.pdf [Accessed August 2020]

Visit England (2020). *Inbound nation, region & county data – London and South East*. [online] Available at: https://www.visitbritain.org/nation-region-county-data?area=1800_100 [Accessed August 2020]

Water Resources South East (2020). *Method Statements*. [online] Available at:
<https://www.wrse.org.uk/media/jb5nwwx5/wrse-method-statements-summary-document.pdf>
[Accessed August 2020]

Water Resources South East (2020). *Future water resource requirements for South East England*. [online] Available at: <https://www.wrse.org.uk/media/anbhm2cb/wrse-future-water-resource-requirements-march-2020-3.pdf> [Accessed August 2020]

A.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)
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	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

programme and the Environmental Report		no set time period for consultation. The SEA Directive states that the Consultation Bodies and the public ' <i>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</i> '. The Environmental Report will be consulted upon alongside the draft Plan. To gather more information through the opinions and concerns of the public
	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

Source: Adapted from 'A Practical Guide to the Strategic Environmental Assessment Directive' (ODPM, September 2005)

B. 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 1.5°C to 2°C 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 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

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
		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		
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	<p>Advice from the International Council for the Exploration of the Sea (ICES) in 2006 indicated that the stock of the European eel (<i>Anguilla anguilla</i>) 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.</p> <p>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 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.</p>
Our life insurance, our natural capital: an EU biodiversity strategy to 2020 (2011)	Biodiversity	<p>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:</p> <ul style="list-style-type: none"> • 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; and • A bigger EU contribution to averting global biodiversity loss. <p>The strategy is in line with two commitments made by EU leaders in March 2010. The first is the 2020 headline target:</p>

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
		'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	<p>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:</p> <ul style="list-style-type: none"> • 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); and • 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 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	<p>This a set of binding legislation to ensure the EU meets its climate and energy targets for the year 2020. The targets are:</p> <ul style="list-style-type: none"> • 20% reduction in GHGs • 20% of EU energy from renewables • 20% improvement in energy efficiency

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
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
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.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
The European Landscape Convention (2006)	Landscape	The Convention is also known as the Florence Convention and it aims to promote 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: <ul style="list-style-type: none"> • 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; • Soil must be protected from erosion and pollution; and • 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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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; and • Streamlining legislation. <p>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.</p>

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
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: <ul style="list-style-type: none"> • 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; and • 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 repealing Directive 76/160/EEC (from 2014)	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.
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: <ul style="list-style-type: none"> • 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; and • 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.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
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.
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: <ul style="list-style-type: none"> • 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; and • 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: <ul style="list-style-type: none"> • 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.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
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 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: <ul style="list-style-type: none"> • 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.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
Standing Advice on Protected Species, Natural England (2016)	Biodiversity	Provides guidance on reviewing planning applications which might have an affected on protected species.
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: <ul style="list-style-type: none"> • 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; and • New and emerging pests and diseases and invasive non-native species affecting people, plants and animals.
The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, Defra (2018)	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 the following key sectors: Natural environment; Infrastructure; People and the built environment; Business and industry; and Local government.
National Planning Policy Framework (NPPF) (2019)	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.
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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Creating a new governance framework for the environment • A new direction for resources and waste management • Improving air quality

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
		<ul style="list-style-type: none"> • 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	<p>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.’</p> <p>Guiding principles:</p> <ul style="list-style-type: none"> • Living within environmental limits • Ensuring a strong, healthy, and just society • 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 ambitious actions and sets out the provisions for Marine Conservation Zones (MCZs), a Marine Planning system, reform of inshore fisheries, amongst others.
The Wildlife and Countryside Act 1981 (as amended)	Cross-cutting	The Wildlife and Countryside Act is the main Act which protects animals, plants 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.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
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.
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: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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.
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	Provides guidance on SEA in relation to the historic environment.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
Historic Environment, Historic Environment (2016)		
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	<p>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:</p> <ul style="list-style-type: none"> 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.
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.
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	<p>The Act amends the Water Resources Act and Regulations 1991 and the Water Industry Act 1991. The Act has the following four broad aims:</p> <ul style="list-style-type: none"> the sustainable use of water resources; strengthening the voice of consumers; a measured increase in competition; and 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.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
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 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: <ul style="list-style-type: none"> • Surface freshwater (including lakes, streams and rivers); • Groundwaters; • Groundwater dependant ecosystems; • Estuaries; and • 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).
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.
Understanding the risks, empowering communities, building resilience: The National Flood and Coastal Erosion Risk Management Strategy for England, Defra and Environment Agency (2014)	Water, Climatic Factors, Population, Human Health	This strategy provides the overarching framework for future action by all risk management authorities to tackle flooding and coastal erosion in England. The Environment Agency are revising the National Flood and Coastal Risk Management Strategy and is planned to be published in spring 2020.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
National Flood and Coastal Erosion Risk Management Strategy for England (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: <ul style="list-style-type: none"> • Climate resilient places • Today’s growth and infrastructure resilient in tomorrow’s climate • A nation ready to respond and adapt to flooding and coastal change
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: <ul style="list-style-type: none"> • 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
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.
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.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
Marine Plans – South East Inshore, South Inshore, South Offshore (Marine Management Organisation)		<p>A marine plan:</p> <ul style="list-style-type: none"> • 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. <p>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.</p> <p>All marine plan areas are scheduled to have a plan by 2021.</p>
UK Marine Policy Statement (2011)		<p>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.</p>
Local		
Site Improvement Plans for Natura 2000 sites: London & South East, Natural England	Biodiversity	<p>Site Improvement Plans outline the priority measures needed to achieve and maintain the European species and habitats within a site in favourable condition. They include the following:</p> <ul style="list-style-type: none"> • Provide a high level overview of the issues affecting the condition of the site • Identify the priority actions to address the issues • Identify the potential funding sources available
Local Development Plans (Various)	Cross-cutting	<p>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.</p> <p>The following local authorities fall within the WRSE boundary and therefore their Local Plans/Core Strategies are relevant:</p> <ul style="list-style-type: none"> • Bracknell Forest; Central Bedfordshire; West Berkshire; Wiltshire; Swindon; The City of Brighton and Hove; City of Southampton; Luton; Medway; Reading; Slough; Windsor and Maidenhead; Wokingham; City of Portsmouth; Isle of Wight; Wycombe ; South Bucks ; Chiltern ; Aylesbury Vale ; South Cambridgeshire; Lewes; Rother; Wealden; Eastbourne; Hastings; Brentwood ; Epping Forest; Uttlesford; Chelmsford; Braintree; Harlow; Cotswold; Stroud; Basingstoke and Deane; New Forest; Eastleigh; East Hampshire; Winchester; Test Valley; Hart; Gosport; Fareham; Havant; Rushmoor; Three Rivers; Hertsmere; Broxbourne; Dacorum; East Hertfordshire; St. Albans; Welwyn Hatfield; North Hertfordshire; Watford; Vale of White Horse; South Oxfordshire; Cherwell; West Oxfordshire; Stevenage; Sevenoaks; Tonbridge and Malling; Thanet; Ashford; Canterbury; Dover; Maidstone; Swale; Dartford; Gravesham; South Northamptonshire; Oxford; Waverley; Tandridge; Woking; Surrey Heath; Runnymede; Guildford; Reigate and Banstead; Mole Valley; Elmbridge; Spelthorne; Epsom and Ewell; Stratford-on-Avon; Arun; Adur; Chichester; Mid Sussex; Horsham; Bromley London Borough; Hounslow London Borough; Worthing; Crawley; Ealing London Borough; Havering London Borough; Hillingdon London Borough; Kingston upon Thames London Borough; Croydon London Borough; Harrow London Borough; Barnet London Borough; Brent London Borough; Lambeth London Borough; Southwark London Borough; Lewisham London Borough; Greenwich London Borough; Bexley London Borough; Enfield London Borough; Waltham Forest London Borough; Redbridge London Borough; Sutton London Borough; Richmond upon Thames London Borough; Merton London Borough; Wandsworth London Borough; Hammersmith and Fulham London Borough; City and County of the City of London; Tunbridge Wells; Kensington and Chelsea London Borough; City of Westminster London Borough;

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
		Folkestone and Hythe; Camden London Borough; Tower Hamlets London Borough; Islington London Borough; Hackney London Borough; Haringey London Borough; Newham London Borough; Barking and Dagenham London Borough; Tewkesbury; Cheltenham; and Wychavon.
National Character Areas (NCAs) (Various), Natural England	Landscape	NCAs are subdivisions in England based on a combination of landscape, biodiversity, geodiversity and economic activity characteristics. They intend to inform local decision making.
River Basin Management Plans (RBMPs), Defra and Environment Agency (2015)	Water	RBMPs set out 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.
Catchment Flood Management Plans (CFMPs), Defra and Environment Agency (2016)	Water	<p>CFMPs set out the risk for each of the river basins in relation to flooding from rivers, the sea, surface water, groundwater and reservoirs across England and Wales. They do not cover coastal flooding which are 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; landowners, farmers and land managers; the public and businesses to enhance their understanding of flood risk and how it will be managed.</p> <p>The CFMPs identify six generic flood risk management policies:</p> <ul style="list-style-type: none"> ● Policy 1 - Areas of little or no flood risk where the Environment Agency 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 2 - Areas of low to moderate flood risk where the Environment Agency 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 Environment Agency 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 Environment Agency 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 Environment Agency 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 Environment Agency 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. <p>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.</p>
Shoreline Management Plans (Various)	Water	Shoreline Management Plans (SMPs) are developed by Coastal Groups with members mainly from local councils and the Environment Agency. They cover the whole of the coastline and identify the most sustainable approach to managing the flood and coastal erosion risks to the coastline in the short-term (0 to 20 years), medium term (20 to 50 years) and long term (50 to 100 years).

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
Catchment Management Strategies (Various)	Water	The Catchment Abstraction Management Strategy (CAMS) set out how the Environment Agency will manage water abstraction. They outline where water is available, and also, if relevant, where the Environment Agency 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.
National Park Management Plans – New Forest and South Downs		<p>All National Parks are expected to have a Management Plan for their area, to help guide the work of those with responsibilities or an interest in the Park. Government guidance emphasises that the plan should be for the National Park as a place, and not specifically for the National Park Authority or any other particular organisation. However, relevant authorities are required to take the two national park purposes into account in any work that may affect the area (Environment Act, 1995). The purposes are:</p> <ul style="list-style-type: none"> • To conserve and enhance the natural beauty, wildlife and cultural heritage of the National Park • To promote opportunities for the understanding and enjoyment of the special qualities of the area by the public • National Park Authorities also have a duty, in taking forward the two purposes, to seek to foster the economic and social well-being of local communities within the National Park. <p>The original New Forest National Park Management Plan was updated in 2015 and has been published as the Partnership Plan for the New Forest National Park. It sets out a vision for the National Park describing the overall ambition for how the National Park should look and function in 20 years' time and beyond.</p> <p>The South Downs National Park Management Plan (PMP) - The fundamental approach that underpins the PMP is delivering sustainable development and in support of that, taking an ecosystem approach. The PMP contains a vision and outcomes that are long-term, policies that are for five years and beyond and a delivery framework showing projects and initiatives.</p>
AONB Management Plans (Various)		Areas of Outstanding Natural Beauty (AONB) are protected to conserve and enhance their natural beauty and distinctiveness. There are eight AONB within the WRSE regional.
Water Companies		
Affinity Water		
Environment Policy (2019)	Cross-cutting	<p>The Policy sets out Affinity Water's commitment and vision on being the leading community-focussed water company, protecting the environment, preventing pollution and complying with environmental regulations. Management of the impact on the natural environmental will be achieved by:</p> <ul style="list-style-type: none"> • Minimising waste generation • Optimising energy use • Controlling pollution risks • Minimising environmental impacts from the supply chain • Working collaboratively with communities, regulators and government agencies to manage impacts on the environment
WRMP 2020-2080 (2020)	Water	The WRMP sets out how Affinity Water will provide a reliable, resilient, efficient and affordable water supply to customers from 2020 to 2080, whilst protecting the environment. It aims to balance the availability of water with the demand and recognises the important role population growth and climate change will play in achieving this balance. The bulk of Affinity Water's water supply is from aquifers (65%) and the remaining is from rivers. The following are key themes of the Plan:

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
		<ul style="list-style-type: none"> ● Demand growth through population growth ● Climate change – extreme weather ● Reduce demand through metering and water efficiency ● Collaboration and trading of water resources ● Water quality ● Sustainable abstraction ● Leakage ● Drought ● Resilience in the round short, medium and long term ● Achieving their ambition
Drought Plan Annual Update (2019)	Water	<p>The Plan sets out to ensure a consistent approach is implemented across Affinity Water’s three regions and throughout the business. The Plan is built on their experience of previous drought management over the last 30 years, including the multiple year groundwater droughts of 1990 to 1992, 1996 to 1998 and 2005 to 2007, as well as 2011 to 2012 and 2017 to 2019. A proactive approach is taken to ensure resilience and secure supplies through:</p> <ul style="list-style-type: none"> ● Being prepared for drought at any time and having the Plan ready to deal with it. ● Continuous monitoring of environmental conditions in partnership with the Environment Agency ● Identifying the onset of drought and mobilising additional resources to proactively manage risks ● Assessing drought duration and severity together with the impact on water available to customers ● Minimising environmental impact of operations during drought conditions by optimising the use of our resources ● Reducing water demand or increasing capacity of our assets to maintain security of supplies ● Acting and communicating with customers and other stakeholders in partnership
Revised Business Plan (2019)	Water	<p>The Business Plan sets out Affinity Water’s focus, taking into account Ofwat’s responses to the original plan. The Plan recognises that Affinity have performed well in some areas during AMP6, but fell short in others such as performance on supply interruptions. Some of the key features of the Plan include:</p> <ul style="list-style-type: none"> ● Reducing household bills ● Making themselves more visibility accountable to different communities by increasing performance commitments ● Increasing the leakage reduction target from 15% to 18.5%
Portsmouth Water		
Biodiversity, Public Amenities and Recreation Strategy (undated)	Cross-cutting	<p>Sets out Portsmouth Water’s vision to promote a high quality environment that supports biodiversity, public amenities and recreation. In 2015, they made a commitment to triple the money made available to biodiversity projects on their sites following support from customers to spend more on the environment. Annual reports are provided with the most recent published for 2016/17.</p>
WRMP 2020-2045 (2019)	Water	<p>The Plan sets out how Portsmouth Water will secure resilient water supplies over the next 25 years. It demonstrates the need for investment to maintain the balance between supply and demand over the planning period. It shows the programme of actions Portsmouth Water plan to undertake to ensure the</p>

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
		<p>Company can be resilient to a 1 in 200 year drought and support other water companies in the region. The following six schemes were selected as part of the WRMP:</p> <ul style="list-style-type: none"> • Reduce leakage • Water efficiency (metering) • Havant Thicket Reservoir • Groundwater improvements • Enhanced groundwater source • Drought permits
Drought Plan (2019)	Water	The Plan outlines how Portsmouth Water will manage droughts. The sources of supply for Portsmouth Water are all groundwater based and there are currently no surface water storage reservoirs (Havant Thicket Reservoir by 2029) therefore drought management relies upon balancing demands with the yield from its sources. The Plan recognises that the greatest challenge is likely to be during dry summers when peak demands are usually experienced.
Business Plan 2020-2025 (2018)	Water	<p>The Plan is underpinned by the four pillars of Ofwat’s PR19 process (customer service, affordable bills, resilience and innovation). Portsmouth Water’s long term vision is “delivering excellence for our customers, our people and our environment”. There are several key themes within the Plan which includes:</p> <ul style="list-style-type: none"> • Ambitious 15% leakage reduction • Havant Thicket – a new major reservoir in the South East • Innovative catchment management and biodiversity • Affordable bills for all • Customer engagement, leading customer service and culture of ‘customer first’
SES Water		
Environment Policy (2019)	Cross-cutting	<p>The Policy outlines SES Water’s commitment to protecting natural resources and recognises the important role they can play in minimising effects. Activities will be managed proactively under the following four core strategies and commitments:</p> <ul style="list-style-type: none"> • Efficient use of natural resources and controlling activities which affect the natural and built environment • Managing energy use and carbon • Limited waste generation and promoting use and recycling • Managing environmental risk in the supply chain
WRMP 2020-2045 (2019)	Water	The Plan sets out the preferred programme (comprising a range of options) to reduce any deficit through supply and demand options within the SES region over the next 25 years. The majority (approximately 85%) of the SES Water’s deployable output is from four main groundwater aquifer resources units (ARUs): North Downs Chalk; Confined Chalk; Mole Valley Chalk; and Lower Greensand.
Drought Plan (2019)	Water	The Plan outlines the operational actions SES Water will consider in response to drought events of different severities. The aim of the plan is to minimise environmental impacts, but where potential impacts are identified, balance of measures that may include restrictions on customers’ use of water is presented.
Business Plan 2020-2025 (2018)	Water	<p>The Plan sets out five key pledges, supported by 25 targets, to improve service to customers. These pledges are as follows:</p> <ul style="list-style-type: none"> • High quality water all day, every day

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
<ul style="list-style-type: none"> ● Excellent service, whenever and however you need it ● Fair prices and help when you need it ● Support a thriving environment we can all rely upon ● A service that is fit now and for the future 		
Southern Water		
Environment Policy (2019)	Cross-cutting	Sets out Southern Water’s environmental commitments which include the following, amongst others: <ul style="list-style-type: none"> ● Prevent pollution ● Provide sustainable and reliable water and wastewater services with minimise nuisance and carbon emissions ● Minimise waste ● Collaborate with customers, contractors, regulators, suppliers and other stakeholders ● Protect the environment by promoting the sustainable and efficient use and conservation of water, energy and natural resources
WRMP 2020-2070 (2019)	Water	The Plan sets out how Southern Water will secure reliable water supplies across each of the water resource zones (WRZs) making up its supply area over the next 50 years. It includes detailed proposals that take account of challenges they know already exist, and a range of future uncertainties. The WRMP19 adopts a ‘twin track’ approach to addressing the forecast supply-demand deficit, with demand management (including leakage reduction) options to reduce water demand within Southern Water’s supply area being considered alongside the development of options to enhance reliable water supply availability.
Drought Plan (2019)	Water	The Plan details the actions Southern Water will take to save and produce more water during a drought as well as outlining the actions customers and businesses will have to take. The supply of water in the Southern Water region comes from groundwater abstractions, river abstractions and reservoir abstractions. The Plan outlines the actions required across five key stages in a drought: Normal: No drought; Stage 1: Impending drought; Stage 2: Drought; Stage 3: Severe drought – phase 1; and Stage 4: Severe drought – phase 2.
Business Plan 2020-25 (2019)	Water	The Plan sets out a framework for Southern Water over the next five years to achieve their vision: “to create a resilient water future for customers in the South East”. The vision is supported by five long term outcomes and five transformational programmes which includes the following: <ul style="list-style-type: none"> ● Outcomes <ul style="list-style-type: none"> – Resources – Environment – Economy – Communities – Value ● Transformational Programmes <ul style="list-style-type: none"> – Target 100 – Catchment First – Networks 2030 – Resource Hubs

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
– Sustainable Drainage 2030		
South East Water		
WRMP 2020 to 2080 (2019)	Water	The Plan sets out how South East Water plan to secure water supplies for today’s and tomorrow’s customers, from 2020 to 2080. It estimates the amount of water they will need, and what they will need to do – where and by when – to meet those future water needs. It represents a twin track and demand management led plan where over 50 per cent of the new water generated through the plan will come from demand management, with the remainder to be met through the development of a small number of key new water resource schemes.
Drought Plan 2018 to 2030 (2019)	Water	The Plan outlines a framework and actions that will be implement before, during and after every drought event to maintain a secure supply of water in the South East Water region. A three-stage system for the evaluation of the appropriate level of response to a progressing drought event has been adopted: <ul style="list-style-type: none"> ● Stage 1: Monitoring of key representative groundwater, rainfall, and reservoir individual trigger sites, and of demands per drought region. The rainfall data feed into a recharge calculation so recharge is monitored for each groundwater unit ● Stage 2: Matrix assessment of four types of triggers (groundwater, reservoir, recharge and demand) to determine drought severity status ● Stage 3: Decision making and selection of drought actions for responding to and managing change in drought status
Pure know h ₂ ow – Business Plan 2020 to 2025 (2019)	Water	The Plan sets out the plan for South East Water over the next five years. Customer satisfaction is at the core of the Plan and it is built around the following five key themes: <ul style="list-style-type: none"> ● Customer satisfaction ● Resilient customers ● Innovation ● Responsible business commitments ● Goes beyond historical performance
Thames Water		
Sustainability Policy	Cross-cutting	Sustainability is aligned to the Corporate Strategy and reporting on sustainability is published annual. There are nine key themes within Thames Water’s Sustainability Policy: <ul style="list-style-type: none"> ● Protecting water, a precious resource. ● Managing wastewater and sustainable drainage. ● Mitigating climate change. ● Adapting to climate change. ● Delivering efficient operations. ● Investing sustainably for the long-term. ● Ensuring responsible operations. ● Enhancing customer inclusion. ● Maintaining a safe and sustainable workforce.

Policy, Plan or Programme	Topic	Key Objectives, Guidance and References
WRMP 2020 to 2100 (2019)	Water	<p>The Plan sets out the actions Thames Water will take to provide a secure and sustainable supply of water for our customers in London and the Thames Valley over the next 80 years. It recognises that the already water stressed area is likely to come under further pressures from population growth and a changing climate whilst also upholding a requirement to protect the environment. There following are key themes in the Plan:</p> <ul style="list-style-type: none"> ● Reducing amount of water abstracted from rivers and underground sources ● Reduce leakage by investing in new pipes ● Reduce consumption ● Innovation to boost supply
Drought Plan (2017)	Water	<p>The Plan covers the next 5 years, up to 2022 and demonstrates how Thames Water will react to a period of unusually low rainfall. Approximately 80% of Thames Water's is from river abstraction and the remainder is derived from groundwater abstraction. The four worst summer droughts affecting water supply capability occurred over 1920/21, 1933/34, 1943/44 and 1975/76 and were characterised by a prolonged period of around 12 to 18 months of below average rainfall.</p>
Building a better future – Business Plan 2020 to 2025	Water	<p>The Plan sets out how Thames Water are going to invest to build a better future for our customers and our region, create customer advocacy and enhance the environment. The following are outlined as key priorities:</p> <ul style="list-style-type: none"> ● Deliver brilliant customer engagement to create lifelong advocacy ● Invest in resilient systems and assets ● Protect and enhance the environment ● Build a collaborative and capable team, dedicated to serving our customers ● Use data from customers, operations and the environment to make better decisions

C. Baseline Maps

Figure C.1: Special Protection Areas and Special Areas of Conservation

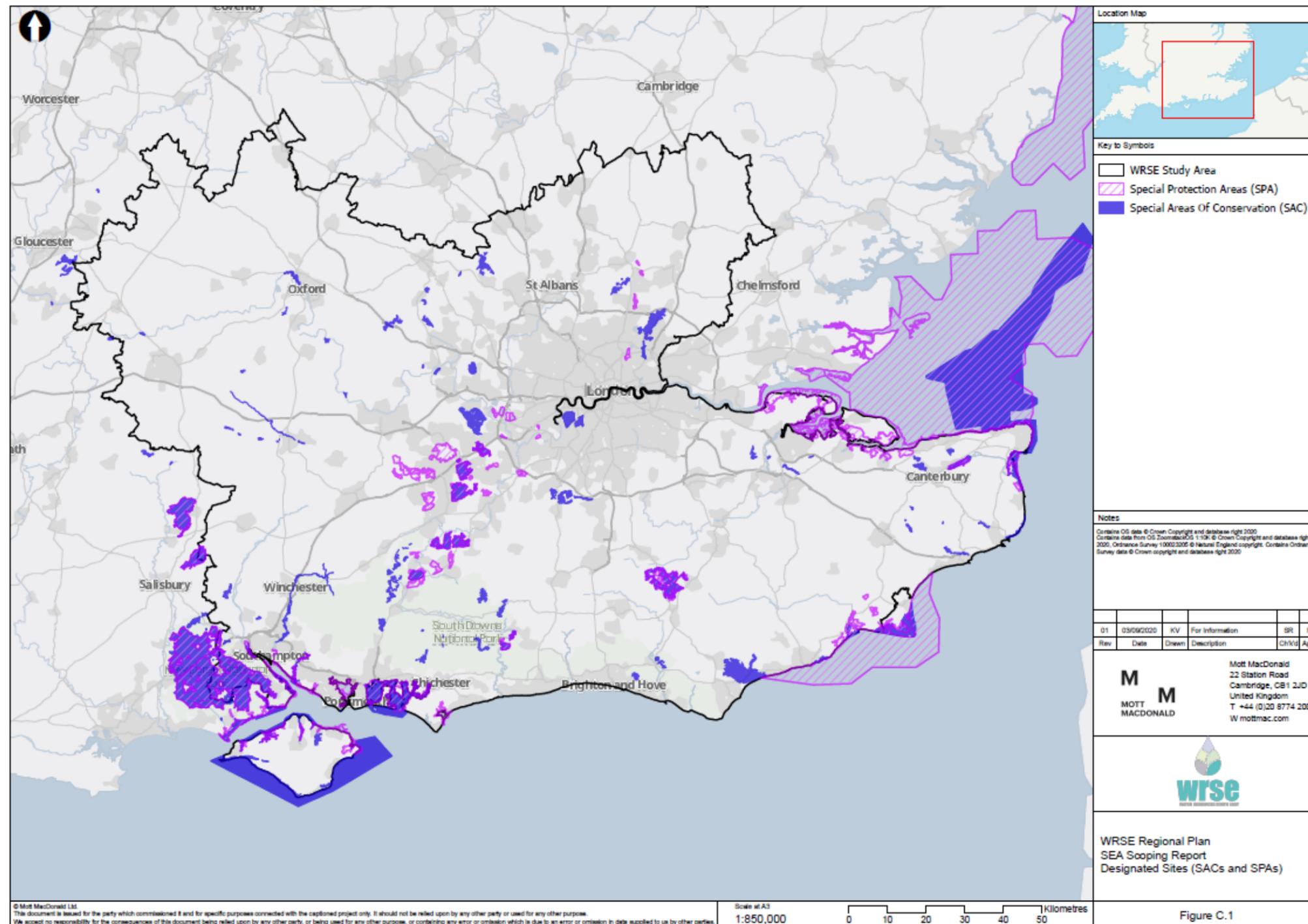


Figure C.2: Sites of Special Scientific Interest and Ramsar Sites

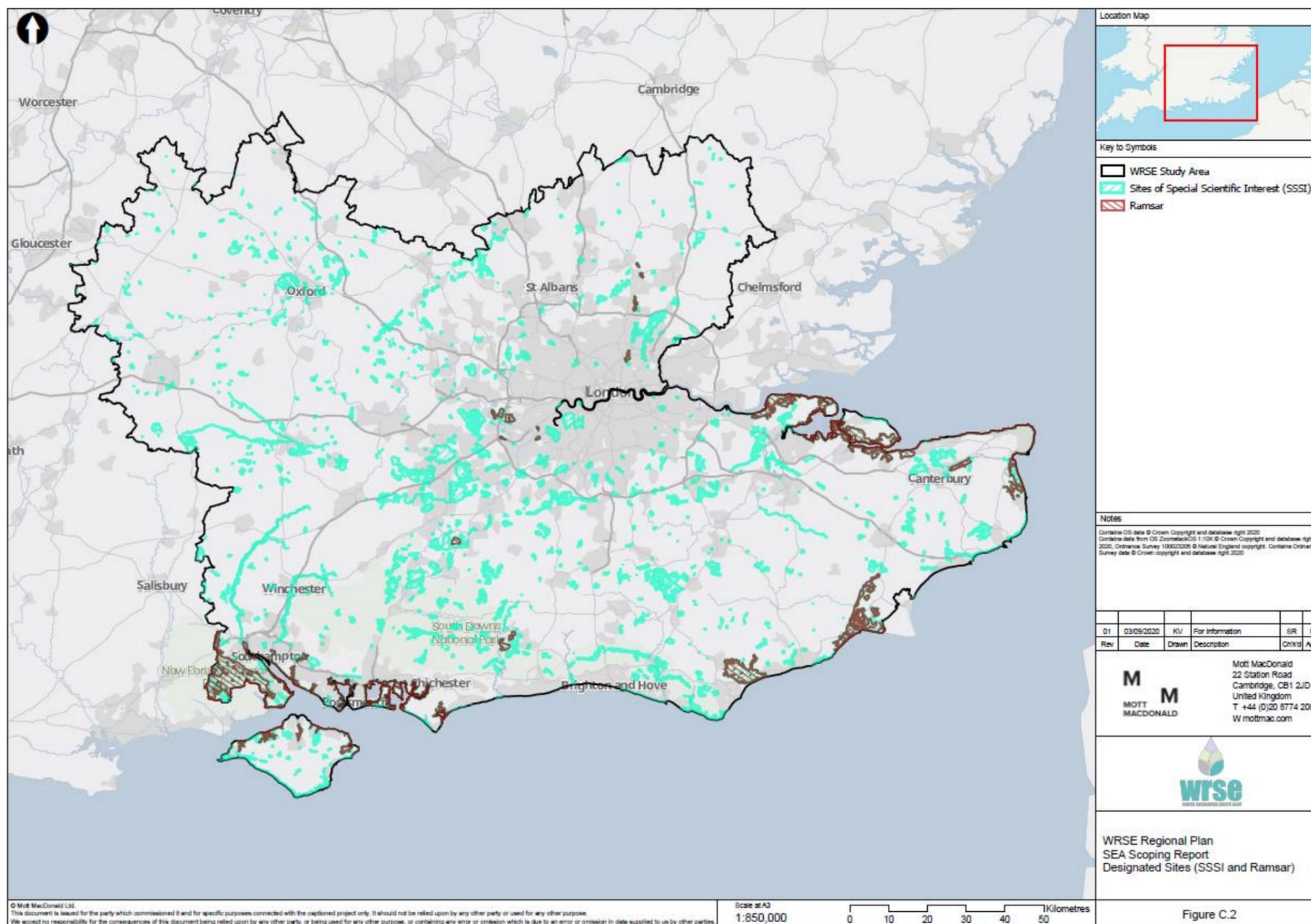


Figure C.3: National Nature Reserves and Local Nature Reserves

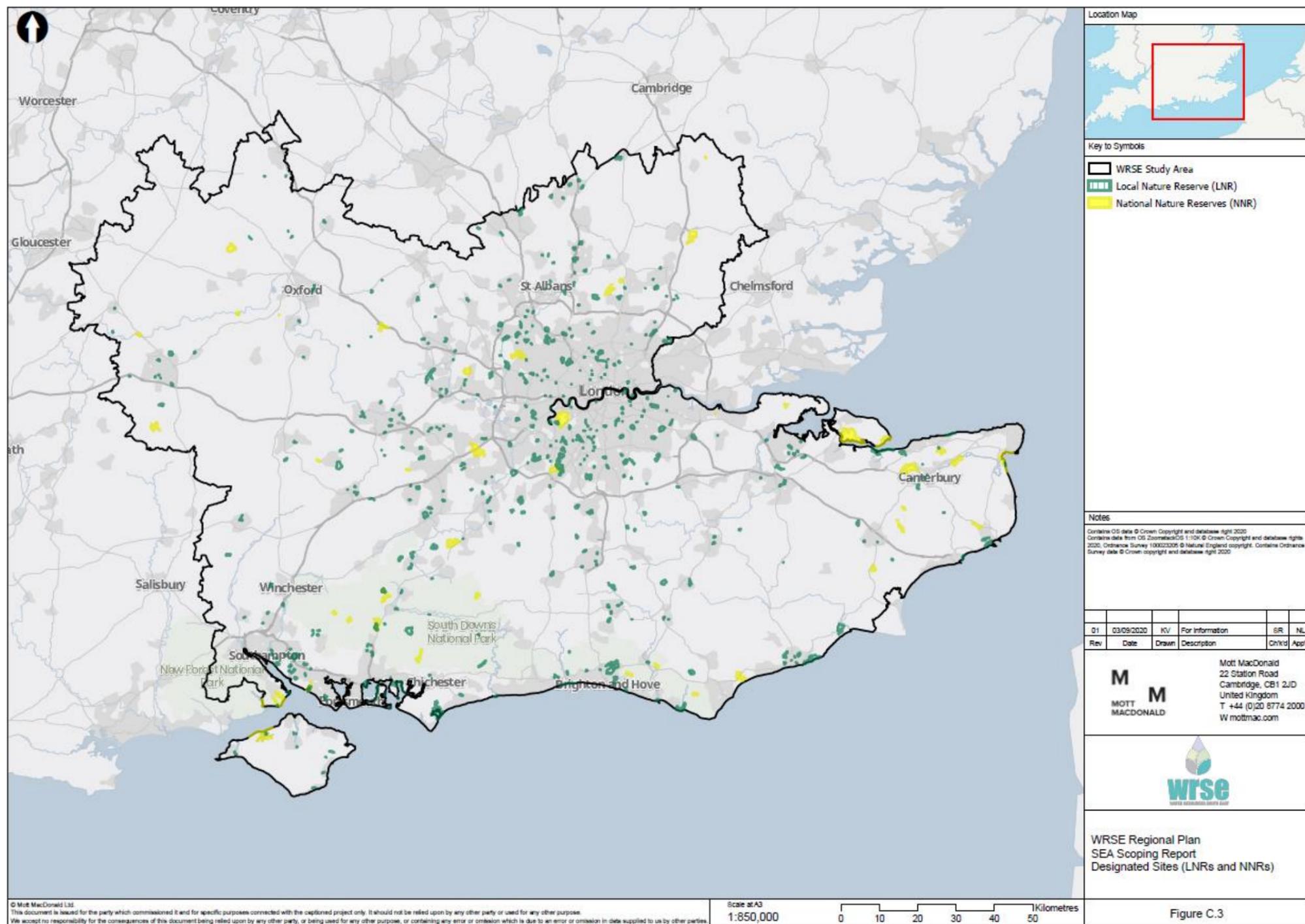


Figure C.4: Marine Conservation Zones and Offshore Marine Protection Areas

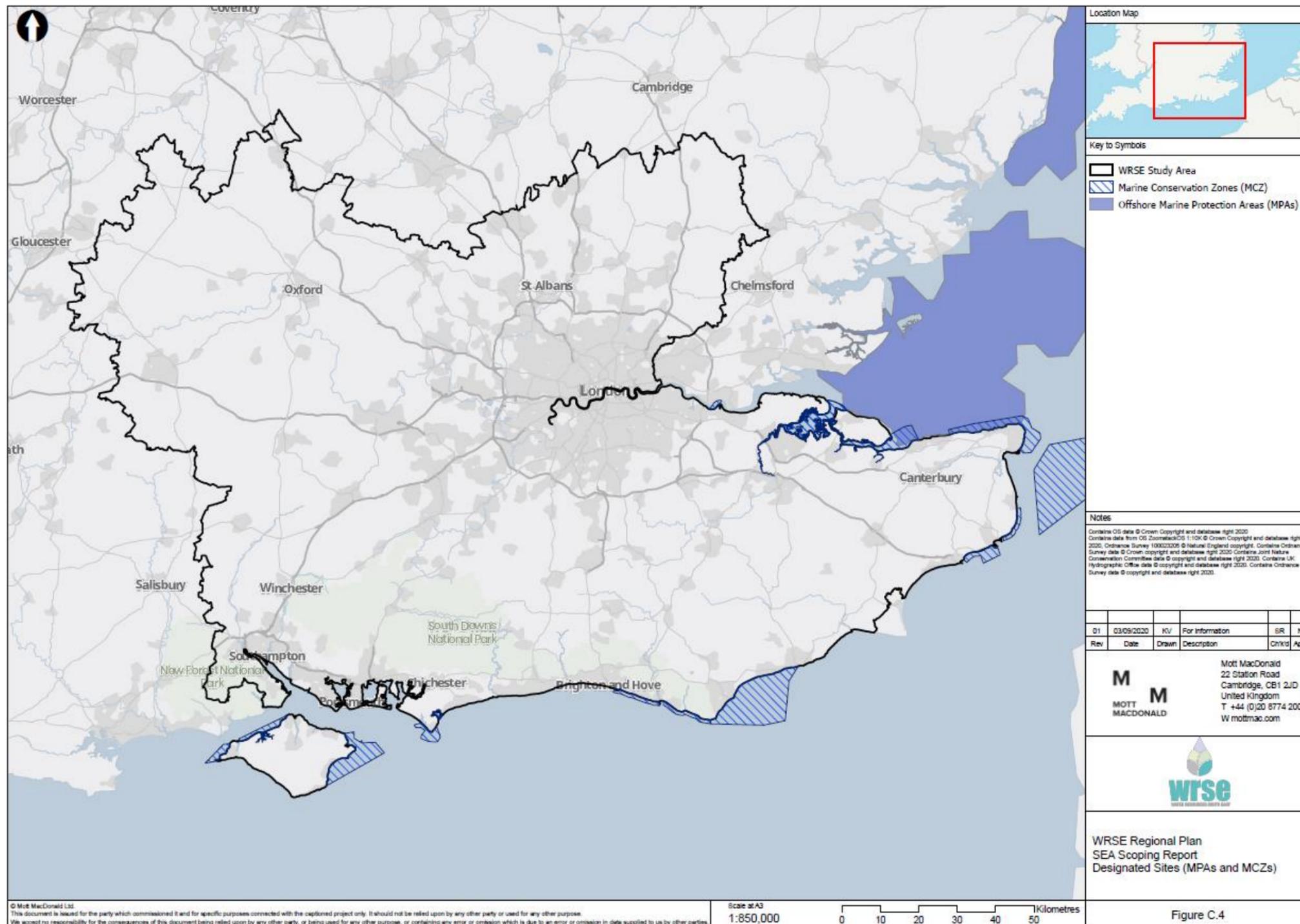


Figure C.5: Main Rivers and Agricultural Land Classification

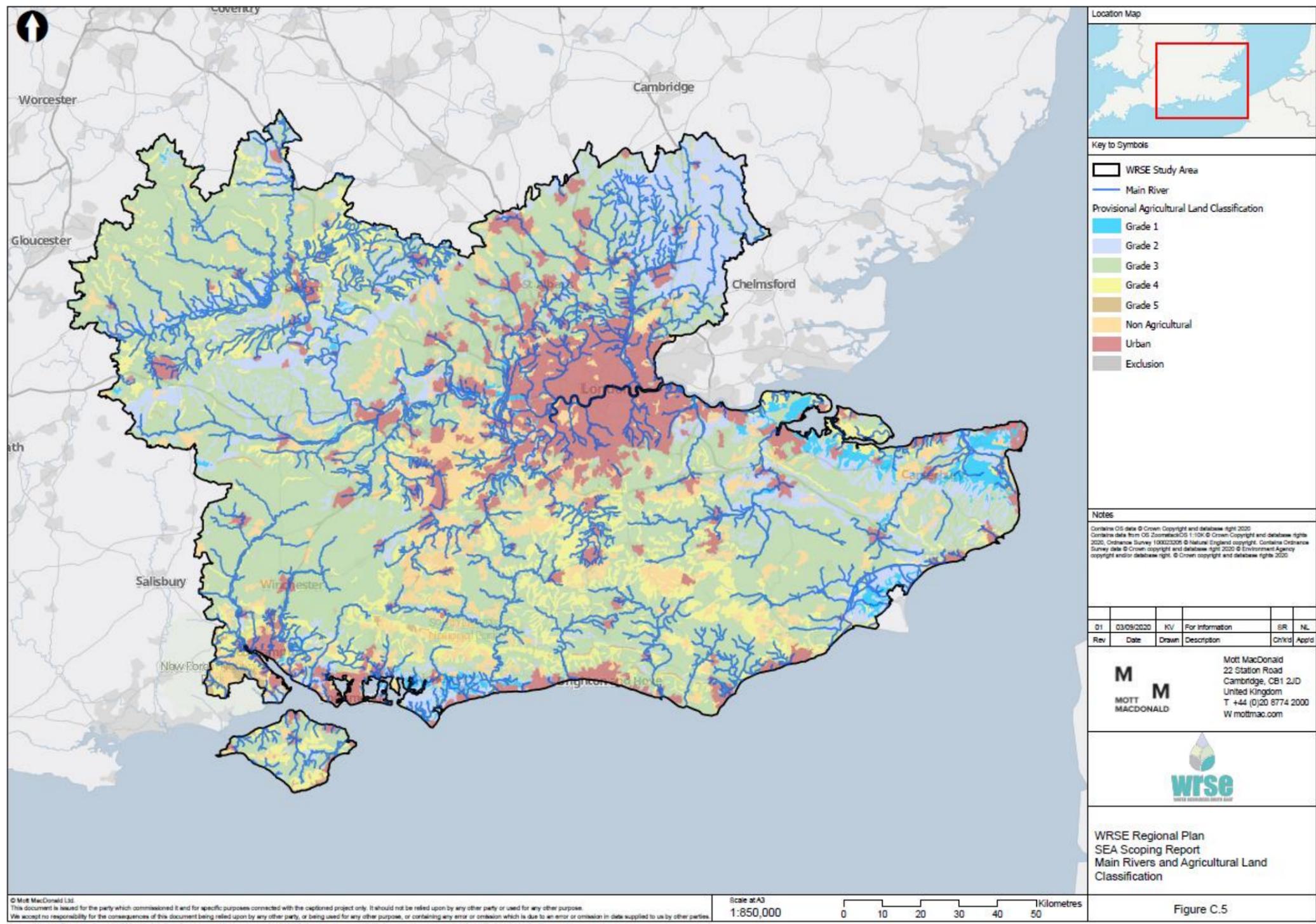


Figure C.6: Heritage Assets

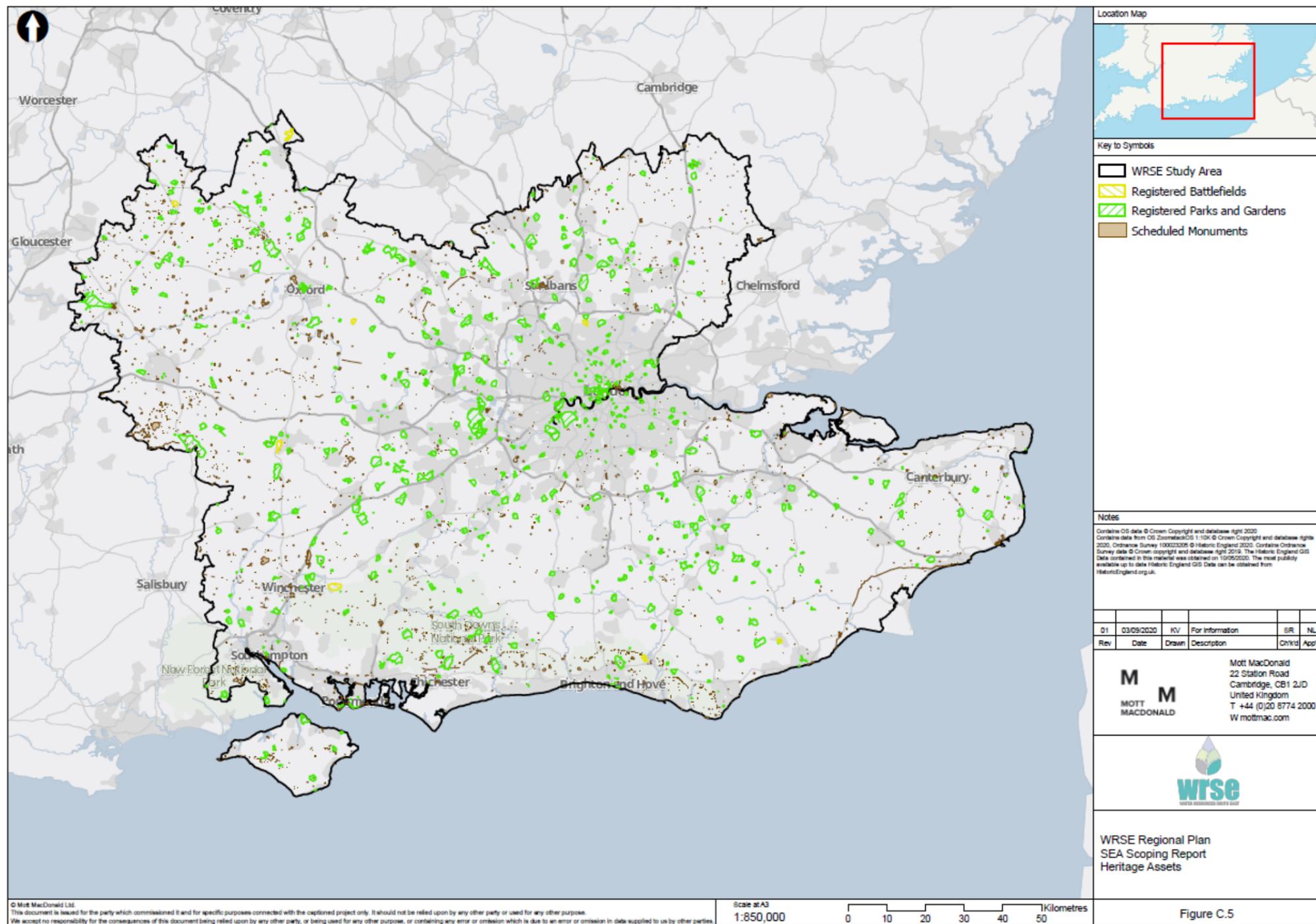


Figure C.7: Areas of Outstanding Natural Beauty

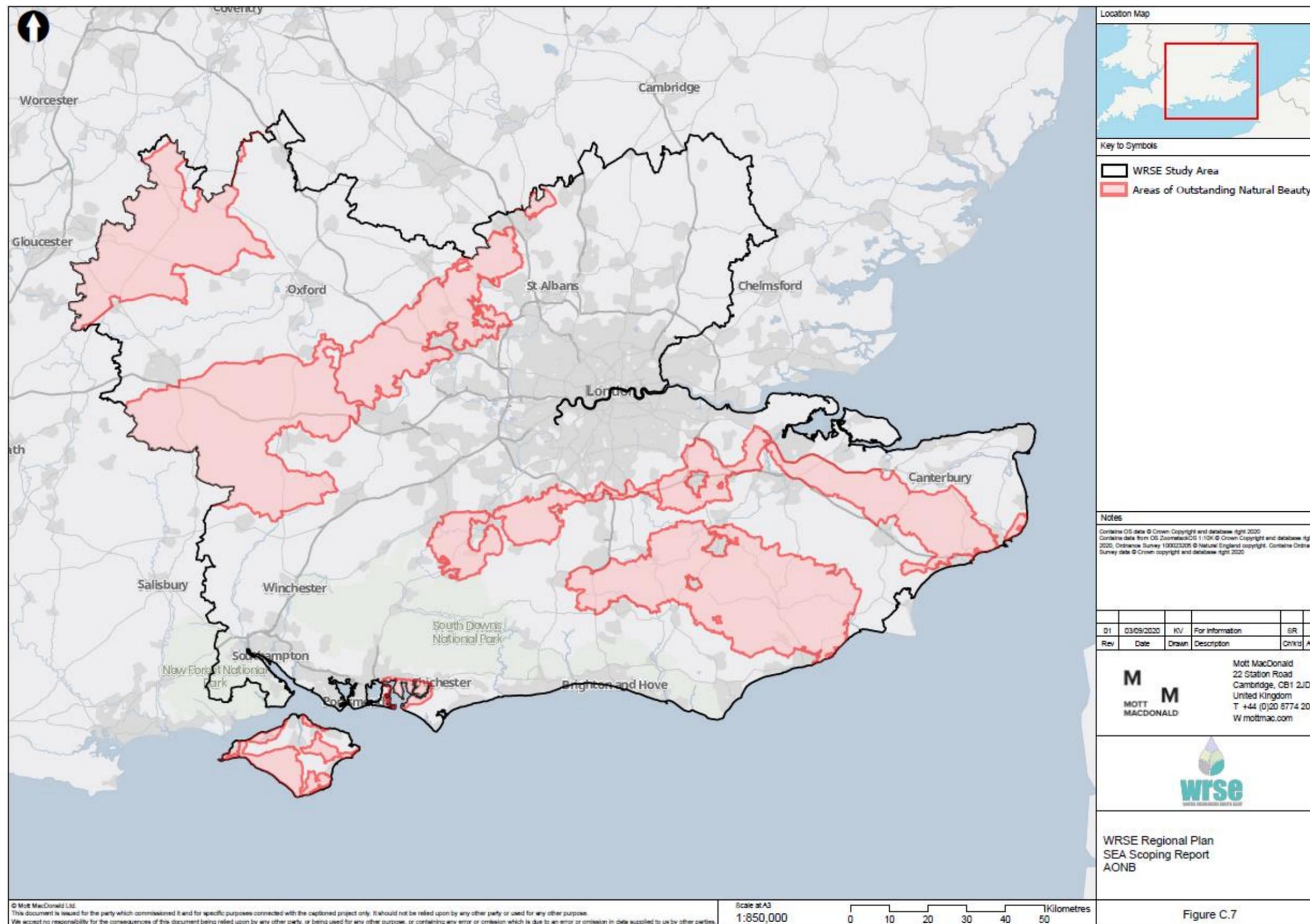


Figure C.7

D. List of Local Authorities in WRSE Region

Local Authorities in the WRSE Region			
Adur	Epsom and Ewell	Reading	Wealden
Arun	Fareham	Redbridge	Welwyn Hatfield
Ashford	Folkestone and Hythe	Reigate and Banstead	West Berkshire
Aylesbury Vale	Gosport	Richmond upon Thames	West Oxfordshire
Barking and Dagenham	Gravesham	Rother	Westminster
Barnet	Greenwich	Runnymede	Wiltshire
Basingstoke and Deane	Guildford	Rushmoor	Winchester
Bexley	Hackney	Sevenoaks	Windsor and Maidenhead
Bracknell Forest	Hammersmith and Fulham	Slough	Woking
Braintree	Haringey	South Bucks	Wokingham
Brent	Harlow	South Cambridgeshire	Worthing
Brentwood	Harrow	South Northamptonshire	Wychavon
Brighton and Hove	Hart	South Oxfordshire	Wycombe
Bromley	Hastings	Southampton	
Broxbourne	Havant	Southwark	
Camden	Havering	Spelthorne	
Canterbury	Hertsmere	St Albans	
Central Bedfordshire	Hillingdon	Stevenage	
Chelmsford	Horsham	Stratford-on-Avon	
Cheltenham	Hounslow	Stroud	
Cherwell	Isle of Wight	Surrey Heath	
Chichester	Islington	Sutton	
Chiltern	Kensington and Chelsea	Swale	
City of London	Kingston upon Thames	Swindon	
Cotswold	Lambeth	Tandridge	
Crawley	Lewes	Test Valley	
Croydon	Lewisham	Tewkesbury	
Dacorum	Luton	Thanet	
Dartford	Maidstone	Three Rivers	

Local Authorities in the WRSE Region

Dover	Medway	Tonbridge and Malling
Ealing	Merton	Tower Hamlets
East Hampshire	Mid Sussex	Tunbridge Wells
East Hertfordshire	Mole Valley	Uttlesford
Eastbourne	New Forest	Vale of White Horse
Eastleigh	Newham	Waltham Forest
Elmbridge	North Hertfordshire	Wandsworth
Enfield	Oxford	Watford
Epping Forest	Portsmouth	Waverley

E. Assessment Scoring Criteria

SEA Objective	Datasets/Key Themes	Effect	Description
Biodiversity, Flora, Fauna: <ul style="list-style-type: none"> ● Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) 	<ul style="list-style-type: none"> ● SPA ● SAC ● Ramsar site ● SSSIs ● MPA ● MCZ ● NNR ● LNR ● Priority habitats and species ● Non-designated sites ● Terrestrial, aquatic and marine habitats, species and protected sites ● Green networks and corridors (e.g. foraging areas and commuting routes, migration routes, hibernation areas etc. at all scales) 	+++	Major Positive The option would result in a major enhancement on the quality of designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat quality and availability. The option would result in a major increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or large amounts of creation or enhancement of habitat, promoting a major increase in ecosystem structure and function. The option would result in a major reduction or management of INNS.
		++	Moderate Positive The option would result in a moderate enhancement on the quality of designated and/or non-designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a moderate increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a moderate increase in ecosystem structure and function. The option would result in a moderate reduction or management of INNS.
		+	Minor Positive The option would result in a minor enhancement of the quality of designated and/or non-designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a minor increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or small amounts of creation or enhancement of habitat, promoting a minor increase in ecosystem structure and function. The option would result in a minor reduction or management of INNS.
		0	Neutral The option would not result in any effects on designated or non-designated sites including habitats and/or species). It will not have an effect on INNS.

SEA Objective	Datasets/Key Themes	Effect	Description
		-	<p>Minor Negative</p> <p>The option would result in a minor negative effect on the quality of designated and/or non-designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation.</p> <p>The option would result in a minor decrease in the population of a priority species.</p> <p>Effects could be caused by detrimental changes in flows/water quality, or small losses or degradation of habitat leading to a minor loss of ecosystem structure and function.</p> <p>The option would result in a minor increase or spread of INNS.</p>
		--	<p>Moderate Negative</p> <p>The option would result in a moderate negative effect on the quality of designated and/or non-designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation.</p> <p>The option would result in a moderate decrease in the population of a priority species.</p> <p>Effects could be caused by detrimental changes in flows/water quality, or moderate loss or degradation of habitat leading to a moderate loss of ecosystem structure and function.</p> <p>The options would result in a moderate increase or spread of INNS.</p>
		---	<p>Major Negative</p> <p>The option would result in a major negative effect on the quality of designated and/or non-designated sites / habitats due to changes in flow or groundwater levels, water quality or habitat loss or degradation.</p> <p>The option would result in a major decrease in the population of a priority species.</p> <p>Effects could be caused by detrimental changes in flows/water quality, or large losses or degradation of habitat leading to a major loss of ecosystem structure and function.</p> <p>The option would result in a major increase or spread of INNS.</p>
		?	<p>Uncertain</p> <p>From the level of information available the effect that the option would have on this objective is uncertain</p>
Soil:	<ul style="list-style-type: none"> Agricultural Land Classification 	+++	<p>Major Positive</p> <p>The option would result in a major enhancement on the quality of soils through the implementation of catchment approaches, remediation or other measures.</p>

SEA Objective	Datasets/Key Themes	Effect	Description	
<ul style="list-style-type: none"> Protect and enhance the functionality, quantity and quality of soils 	<ul style="list-style-type: none"> Landfill sites – authorised and historic 			
		++	Moderate Positive	The option would result in a moderate enhancement on the quality of soils through the implementation of catchment approaches, remediation or other measures.
		+	Minor Positive	The option is located on a brownfield site and has no effect on soils or existing land use. The option results in the remediation of contaminated land.
		0	Neutral	The option would not result in any effects on soils or land use.
		-	Minor Negative	The option is not located on a brownfield site and/or results in a minor loss of best and most versatile agricultural land or is in conflict with existing land use. The option results in land contamination.
		--	Moderate Negative	The option will result in a moderate loss of best and most versatile agricultural land or is in substantial conflict with existing land use. The option is partially overlying mineral resources leading to partial mineral sterilisation.
		---	Major Negative	The option will result in a major loss of best and most versatile agricultural land or is in substantial conflict with existing land use. The option results in land contamination. The option is directly overlying mineral resources leading to mineral sterilisation.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain
Water: <ul style="list-style-type: none"> Increase resilience and reduce flood risk 	<ul style="list-style-type: none"> Environment Agency Flood Defences Environment Agency Main Rivers 	+++	Major Positive The option results in addressing failure of WFD Good Ecological Status / Good Ecological Potential. The option would result in a major improvement to flood risk. The option would result in a major improvements in water efficiency, reduces demand and improves resilience.	

SEA Objective	Datasets/Key Themes	Effect	Description
<ul style="list-style-type: none"> Protect and enhance the quality of the water environment and water resources Deliver reliable and resilient water supplies 	<ul style="list-style-type: none"> Flood Zones 2 and 3 Surface Water Features WFD River Waterbody Catchments WFD River Waterbodies Cycle 2 Bathing Waters (for desal options) Shellfish Waters (desal options) Source Protection Zones WFD Groundwater bodies 	++	<p>Moderate Positive</p> <p>The option achieves savings through demand management and does not require abstraction to achieve yield.</p> <p>The option contributes to addressing failure of WFD Good Ecological Status / Good Ecological Potential.</p> <p>The option would result in a moderate improvement to flood risk.</p> <p>The option would result in a moderate improvements in water efficiency, reduces demand and improves resilience.</p>
		+	<p>Minor Positive</p> <p>The option achieves savings through demand management and does not require abstraction to achieve yield.</p> <p>The option would result in a minor improvement to flood risk.</p> <p>The option would result in a minor improvements in water efficiency, reduces demand and improves resilience.</p>
		0	<p>Neutral</p> <p>The option would have no discernible effect on river flows or surface/coastal water quality or on groundwater quality or levels. The option would not have an effect on or be affected by flood risk.</p>
		-	<p>Minor Negative</p> <p>The option would result in minor decreases in river flows. River and/or coastal water quality may be affected and lead to short term or intermittent effects on receptors (e.g. designated habitats, protected species or recreational users of rivers and the coastline) that could not be avoided but could be mitigated.</p> <p>The option would result in minor decreases in groundwater quality or levels.</p> <p>The option is located in Flood Zone 2.</p> <p>The option would result in minor decreases in water efficiency, increases demand and reduces resilience.</p>
		--	<p>Moderate Negative</p> <p>The option would result in moderate decreases in river flows. River and/or coastal water quality may be affected and lead to long term or continuous effects on receptors (e.g. designated habitats, protected species or recreational users of rivers and the coastline) that could not reasonably be mitigated.</p> <p>The option results in the likely deterioration of WFD classification.</p> <p>The option would result in moderate decreases in groundwater quality or levels.</p>

SEA Objective	Datasets/Key Themes	Effect	Description
			<p>The option is located in Flood Zone 3.</p> <p>The option would result in moderate decreases in water efficiency, increases demand and reduces resilience.</p>
		---	<p>The option would result in major decreases in river flows. River and/or coastal water quality may be affected and lead to long term or continuous effects on receptors (e.g. designated habitats, protected species or recreational users of rivers and the coastline) that could not reasonably be mitigated.</p> <p>The option results in the deterioration of WFD classification.</p> <p>The option would result in major decreases in groundwater quality or levels.</p> <p>The option is located in Flood Zone 2 or 3 and further contributes to flood risk.</p> <p>The option would result in major decreases in water efficiency, increases demand and reduces resilience.</p>
		?	<p>Uncertain</p> <p>From the level of information available the effect that the option would have on this objective is uncertain.</p>
Air: <ul style="list-style-type: none"> Reduce and minimise air emissions 	<ul style="list-style-type: none"> Air Quality Management Zones Air quality monitoring sites 	+++	<p>Major Positive</p> <p>The option would result in a major enhancement of the air quality within one or more AQMAs.</p>
		++	<p>Moderate Positive</p> <p>The option would result in a moderate enhancement of the air quality within one or more AQMAs.</p>
		+	<p>Minor Positive</p> <p>The option would result in an enhancement of the air quality.</p>
		0	<p>Neutral</p> <p>The option would not result in any effects on Air Quality and AQMAs.</p>
		-	<p>Minor Negative</p> <p>The option would result in a decrease of the air quality.</p>
		--	<p>Moderate Negative</p> <p>The option would result in a decrease of the air quality within one or more AQMAs.</p>

SEA Objective	Datasets/Key Themes	Effect	Description
		---	Major Negative The option would result in a major decrease in the air quality within one or more AQMAs.
		?	Uncertain From the level of information available the effect that the option would have on this objective is uncertain.
Climate Factors: <ul style="list-style-type: none"> Reduce embodied and operational carbon emissions Reduce vulnerability to climate change risks and hazards 	Option Carbon data UKCP18 climate data Sea level rise projections	+++	Major Positive The option will generate additional zero carbon energy that can be fed back into the grid The option will result in a major increase in carbon sequestration.
		++	Moderate Positive The option will be carbon neutral The option will increase resilience/decrease vulnerability to climate change effects. The option will reduce operational carbon emissions by between 100 and 1,000 tonnes CO ₂ e/year. The option will result in a moderate increase in carbon sequestration.
		+	Minor Positive The option includes renewable energy sources that bring operational carbon to under 100 tonnes CO ₂ e/year The option will increase resilience/decrease vulnerability to climate change effects. The option will reduce operational carbon emissions by up to 100 CO ₂ e/year.
		0	Neutral The option would have no discernible effect on greenhouse gas emissions, nor would the option increase resilience/decrease vulnerability to climate change effects.
		-	Minor Negative The option will have a minor impact on resilience/decrease vulnerability to climate change effects. The option will generate operational carbon emissions of between 100 and 1,000 tonnes CO ₂ e/year.
		--	Moderate Negative The option will have a moderate impact on resilience/significantly decrease vulnerability to climate change effects. The option will generate operational carbon emissions of between 1,000 and 10,000 CO ₂ e/year. The option will result in a moderate release of previously sequestered carbon.

SEA Objective	Datasets/Key Themes	Effect	Description
		---	Major Negative The option will have a major impact on resilience/significantly decrease vulnerability to climate change effects. The option will generate operational carbon emissions of more than 10,000 tonnes CO ₂ e/year. The option will result in a major release of previously sequestered carbon.
		?	Uncertain From the level of information available the effect that the option would have on this objective is uncertain.
Landscape: <ul style="list-style-type: none"> Conserve, protect and enhance landscape, townscape and seascape character and visual amenity 	<ul style="list-style-type: none"> Areas of Outstanding Natural Beauty National Character Areas Green Belt land National Park 	+++	Major Positive The option would have a major positive contribution to designated landscape (AONB or National Park) management plan objectives The option results in new, above ground infrastructure that significantly enhances the local landscape, townscape or seascape.
		++	Moderate Positive The option would have a moderate positive contribution to designated landscape management plan objectives The option results in new, above ground infrastructure that has a moderate positive effect on the local landscape, townscape or seascape.
		+	Minor Positive The option results in new, above ground infrastructure that has a minor positive effect on the local landscape, townscape or seascape.
		0	Neutral The option would not result in any effects on the local landscape, townscape or seascape.
		-	Minor Negative The option results in new, above ground infrastructure that has a minor negative effect on the local landscape, townscape or seascape.
		--	Moderate Negative The option would have a moderate negative effect on a designated landscape or feature (i.e. significant visually intrusive infrastructure) whose effects could not be reasonably mitigated. The option results in new, above ground infrastructure that has a moderate negative effect on the local landscape, townscape or seascape.

SEA Objective	Datasets/Key Themes	Effect	Description
		---	Major Negative The option would have a negative effect on a designated landscape or feature (i.e. significant visually intrusive infrastructure) whose effects could not be reasonably mitigated. The option results in new, above ground infrastructure that has a major negative effect on the local landscape, townscape or seascape.
		?	Uncertain From the level of information available the effect that the option would have on this objective is uncertain.
Historic Environment ● Conserve, protect and enhance the historic environment, including archaeology	● Listed buildings: - Grade I listed structures - Grade II* listed structures	+++	Major Positive The option will result in enhancements to designated heritage assets and/or their setting, fully realising the significance and value of the asset, such as: ● Securing repairs or improvements to heritage assets, especially those identified in the Historic England Buildings/Monuments at Risk Register; ● Improving interpretation and public access to important heritage assets.
	- Grade II listed structures	++	Moderate Positive The option will result in enhancements to designated heritage assets and/or their setting. Improving interpretation and public access to important heritage assets.
	● Registered Parks and Gardens: - Grade I Registered Parks and Gardens	+	Minor Positive The option will result in enhancements to non-designated heritage assets and/or their setting.
	- Grade II* Registered Parks and Gardens	0	Neutral The option will have no effect on cultural heritage assets or archaeology.
	- Grade II Registered Parks and Gardens	-	Minor Negative The option will result in the loss of significance of undesignated heritage assets and/or their setting, notwithstanding remedial recording of any elements affected. There will be limited damage to known, undesignated archaeology important sites with a consequent loss of significance only partly mitigated by archaeological investigation.
	● Protected Wreck		
	● Registered Battlefields ● Scheduled Monuments	--	Moderate Negative The option will result in the loss of significance of undesignated heritage assets and/or their setting, notwithstanding remedial recording of any elements affected. The option will diminish of significance of designated heritage assets and/or their setting, notwithstanding remedial recording of any elements affected.

SEA Objective	Datasets/Key Themes	Effect	Description
	<ul style="list-style-type: none"> Conservation Areas World Heritage Sites 	---	<p>The option will diminish the significance of designated heritage assets and/or their setting such as:</p> <ul style="list-style-type: none"> Demolition or further deterioration in the condition of designated heritage assets especially those identified in the Historic England Buildings/Monuments at Risk Register. Loss of public access to important heritage assets and lack of appropriate interpretation. There will be major damage to known, designated archaeology important sites with a consequent loss of significance only partly mitigated by archaeological investigation.
		?	<p>Uncertain</p> <p>From the level of information available the effect that the option would have on this objective is uncertain.</p>
<p>Population, Human Health</p> <ul style="list-style-type: none"> Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing Maintain and enhance tourism and recreation 	<ul style="list-style-type: none"> Noise action important area Indices of Multiple Deprivation 2015 Functional site: <ul style="list-style-type: none"> Schools Medical facilities OS Greenspace dataset: <ul style="list-style-type: none"> Allotments Bowling green Cemetery Golf course Sports facility Play space Playing field Public park or garden 	+++	<p>The option leads to major positive effect on the health of local communities and will ensure that surface water and bathing water quality is maintained within statutory limits.</p> <p>The option creates new, and significantly enhances existing, recreational facilities, publicly accessible greenspace and/or tourism within the operational area.</p>
		++	<p>Moderate Positive</p> <p>The option leads to positive effect on the health of local communities and will ensure that surface water and bathing water quality is maintained within statutory limits.</p> <p>The option enhances existing, recreational facilities, publicly accessible greenspace and/or tourism within the operational area</p>
		+	<p>Minor Positive</p> <p>The option has a temporary positive effect on the health of local communities and will ensure that surface water and bathing water quality is maintained within statutory limits</p>
		0	<p>Neutral</p> <p>The option would not result in any effects on human health and existing recreational facilities and/or tourism.</p>
		-	<p>Minor Negative</p> <p>The option has a temporary effect on human health (e.g. noise or air quality). The option reduces the availability and quality of existing recreational facilities and/or tourism within the operational area.</p>
		--	<p>Moderate Negative</p> <p>The option results in the permanent removal of existing recreational facilities, publicly accessible greenspace and/or tourism within the operational area</p>

SEA Objective	Datasets/Key Themes	Effect	Description
	<ul style="list-style-type: none"> - Religious grounds - Tennis courts • Natural England - Country Parks • National Parks • Section 15 open access areas • CRoW S4 Conclusive Registered Common Land 	---	<p>Major Negative</p> <p>The option has a significant long-term effect on human health (e.g. noise or air quality). The option results in the removal of existing recreational facilities, publicly accessible greenspace and/or tourism within the operational area.</p>
		?	<p>Uncertain</p> <p>From the level of information available the effect that the option would have on this objective is uncertain.</p>
<p>Material Assets</p> <ul style="list-style-type: none"> • Minimise resource use and waste production • Avoid negative effects on built assets and infrastructure 	<ul style="list-style-type: none"> • Transport: <ul style="list-style-type: none"> - Major roads – A roads - Major roads motorway - Railway line - National cycle route - National trails 	+++	<p>Major Positive</p> <p>The option will re-use or recycle substantial quantities of waste materials and any new infrastructure will incorporate substantial sustainable design measures and materials. There will be no increase in energy consumption or energy will be from 100% renewable sources. The option improves national cycle routes or national trails.</p>
		++	<p>Moderate Positive</p> <p>The option will re-use or recycle moderate quantities of waste materials and any new infrastructure will incorporate some sustainable design measures and materials. There will be no increase in energy consumption or energy will be from 90% renewable sources. The option improves national cycle routes or national trails.</p>
		+	<p>Minor Positive</p> <p>The option will re-use or recycle a limited quantity of waste materials and any new infrastructure will incorporate some limited sustainable design measures and materials. There will be no increase in energy consumption or energy will be from 80% renewable sources. The option improves national cycle routes or national trails.</p>
		0	<p>Neutral</p> <p>The option would not result in any effects on material assets.</p>
		-	<p>Minor Negative</p> <p>The option will require new infrastructure with only limited opportunities for the re-use or recycling of waste materials. There are limited opportunities for sustainable design or the use of sustainable materials.</p>

SEA Objective	Datasets/Key Themes	Effect	Description
			<p>The option results in a minor increase in energy consumption with no renewable energy options.</p> <p>The option results in a minor disruption on built assets and infrastructure, including transport.</p>
		--	<p>Moderate Negative</p> <p>The option will require new infrastructure with only limited opportunities for the re-use or recycling of waste materials.</p> <p>The option results in a moderate increase in energy consumption with no renewable energy options.</p> <p>The option results in a moderate disruption on built assets and infrastructure, including transport links.</p>
		---	<p>Major Negative</p> <p>The option will require significant new infrastructure that cannot be provided through the re-use or recycling of waste materials. There are no opportunities for sustainable design or the use of sustainable materials.</p> <p>The option results in a major increase in energy consumption with no renewable energy options.</p> <p>The option results in a major distribution on built assets and infrastructure, including transport links.</p>
		?	<p>Uncertain</p> <p>From the level of information available the effect that the option would have on this objective is uncertain.</p>

F. Habitats Regulations Assessment Method Statement

F.1 Guidance

Section 2.7.2 of the draft Water Resource Planning Guidelines (WRPG) stipulates that regional plans and their component options should be subject to HRA Screening and where likely significant effects (LSE) are identified, Appropriate Assessment should then take place. To ensure these are assessed in a consistent manner, this method statement outlines a recommended approach to HRA Screening (Stage 1), Scoping (Stage 1.5) and undertaking the Appropriate Assessment (Stage 2). This has been produced in accordance with the following guidelines:

- UK Water Industry Research (2012). Strategic Environmental Assessment and Habitats Regulations Assessment - Guidance for Water Resources Management Plans and Drought Plans (12/WR/02/7).
- English Nature (1997-2001). Habitats Regulations Guidance Notes 1-9, Natural England, Peterborough.
- European Commission (2001). Assessment of plans and projects significantly affecting European sites. European Commission, Brussels.
- European Commission (2002). Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission, Brussels.
- European Communities (2007). Managing European sites: The provisions of Article 6 of the Habitats Directive 92/433/EEC. European Commission, Brussels.
- European Commission (2002). Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission, Brussels.

F.2 Stage 1: Test of Likely Significance (LSE)

HRA screening determines whether there will be any LSE on any European site as a result of an options implementation (either on their own or 'in combination' with other plans or projects) and, if so, whether these effects will result in any potential adverse effects on the site's integrity. A 'Likely' Significant Effect means one that cannot be ruled out on the basis of objective information. A likely effect would be considered significant if it could undermine a site's integrity and/or the conservation objectives and/or qualifying features of that European site.

Screening determines the potential for an option to affect a European site. The process identifies any viable pathway from an option to a European site and assesses the potential for those pathways to result in impacts on the integrity of the conservation objectives and qualifying features of that European site.

Screening will be undertaken on the constrained list of options, alongside the SEA process, making use of the initial engineering design, environmental datasets and outcomes of previous environmental work undertaken. It would also provide a useful function in identifying potential requirements for Appropriate Assessment.

At Screening stage, assessments would not be detailed; rather they would provide a high-level assessment of potential for LSE, that could be used during options appraisal. If a conclusion of no LSE cannot be reached on the basis of high-level scheme specific information, there will be the opportunity and requirement for more detailed investigation at the appropriate assessment (Stage 2) if the option is taken forward by WRSE.

F.2.1 Stage 1: Data requirements

WRSE options would be screened using electronic mapping software such as ESRI ArcGIS. This allows for a consistent and objective approach across all options. The mapping would be used to determine if the Zone of Influence (Zol) of the option is located within, or interacts with, a designated site. If so, it is likely that a LSE may occur.

To facilitate this assessment the following data is required:

- Maps of options provided by WRSE members: This would be used to create the Zols.
- Designated site data: Such data would comprise:
 - Special Areas of Conservation (SACs)
 - Special Protection Areas (SPAs)
 - Ramsar sites.

F.2.2 Stage 1 – Step 1: Identifying a Zone of Influence (Zol) or receptor pathway

To determine the ‘impact footprint’ in which an effect may occur for each option, two specific actions would take place. Firstly, specific buffers Zols would be created around the option.

The size of the buffer, within which European sites have the potential to be affected, would depend on the option type. These buffers are based on best practice advice from the Environment Agency and Natural England on previous projects and are given in Table F.1.

Table F.1: Zone of Influence defined for each option type

Option type		Zone of Influence
Aquifer storage and recovery		Where aquifer is in or partially in European site (assumes a neutral cycle and that aquifer would be recharged in winter)
Desalination		5km
Reservoirs	New reservoir	500m
	Increase capacity raising/dredging	500m

Option type		Zone of Influence
	Increase yield/intakes/improve efficiency	5km from source
Water (effluent) reuse from discharge		5km
Transfers	Construction of transfer	500m
	Changes in abstraction regime (new or altered abstractions)	Downstream to where watercourse enters estuarine or coastal waters

Secondly, consideration would be given to the various pathways by which proposed options may adversely affect Natura 2000 sites, that are likely to extend beyond the above described concentric buffers, and influence sites, habitats and species associated with these sites. These are most likely to be associated with the movement of either surface water or groundwater, and will identify where changes to water availability, volume, rate of flow, level of contaminants/pollutants, other changes in water chemistry etc are predicted.

Other potential pathways include the mobilisation of dust, particulates, nitrogen and other airborne contaminants that may blow from the proposed sites to designated sites, settling on sensitive habitats, with consequent detrimentally effects. Such effects could be caused during construction or operation of the proposed options. (These two phases will be considered for all options during Screening). Note that there would be no pre-described maximum distances when considering pathways.

Where the footprint of the buffer or pathway intersects the boundary of a designated site a potential effect will be noted and taken forward for further assessment.

It should be noted that for alterations to current abstractions, only effects on European sites downstream of new abstractions are considered as potential LSE. For increases to current abstraction volume it is assumed that the increased abstraction is still within the current licence limits and therefore unlikely to result in impacts on designated sites, as they are protected by the Environment Agency’s Review of Consents process.

F.2.3 Stage 1 – Step 2: Identifying potential impacts

When the ZoI of an option overlaps with a European Site, or a European Site outside of the ZoI may experience an impact due to an identified impact, receptor pathway, the potential impacts of the option will be assessed depending on the nature and magnitude of the proposed options and the sensitivity of the qualifying features of the European sites.

This will be assessed at Screening stage through the use of professional judgement, using option information to hand, and be presented in a screening matrix. The screening matrix will list potential impacts and then determine the potential for LSE. Table F.2 outlines a non-exhaustive summary of potential impacts, adapted from UKWIR (2012) guidance.

Table F.2: Potential Impacts for consideration in the Screening assessment

Broad categories of potential impacts on European sites (with examples)	Examples of operations resulting in impacts
Physical loss	Development of built infrastructure associated with the option, e.g. pipelines, temporary weirs, access routes.

Broad categories of potential impacts on European sites (with examples)	Examples of operations resulting in impacts
Destruction (including offsite effects) e.g. foraging habitat, smothering	Physical loss is only likely to be significant where the boundary of the option extends within the boundary of the European site, or within an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated).
Physical damage Habitat degradation Erosion Trampling Fragmentation Severance/barrier effects Edge effects	<p>Development of built infrastructure associated with the option, e.g. reservoir embankments, water treatment plants, pipelines, pumping stations.</p> <p>Recreation e.g. cycling, walking, horse-riding, water-sports associated with option benefits e.g. reservoirs.</p> <p>Physical damage is only likely to be significant where the boundary of the option extends within or is directly adjacent to the boundary of the European site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated).</p>
Non-physical disturbance Noise Visual presence Light pollution	<p>Noise from vehicular traffic during construction of the option. Noise from construction traffic is only likely to be significant where the transport route to and from the option is within 500m of the boundary of the European site.</p> <p>Plant and personnel involved in construction and operation of the option e.g. for maintenance plus non-operational activities such as recreation associated with option e.g. reservoirs. These effects (noise visual /human presence) are only likely to be significant where the boundary of the option is within 500m of the boundary of the European site or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a European site is designated).</p> <p>Development of built infrastructure associated with the option, which includes artificial lighting. Effects from light pollution are only likely to be significant where the boundary of the option is within 500m of the boundary of the European site. From a review of Environment Agency internal guidance on HRA and various websites it is considered that effects of vibration and noise and light are more likely to be significant if development is within 500m of a European site.</p>
Water table/ availability Drying Flooding/storm water	Change to water levels and flows due to water abstraction, storage and drainage interception associated with inland options.

Broad categories of potential impacts on European sites (with examples)	Examples of operations resulting in impacts
<p>Changes to surface water levels and flows Changes to groundwater level and flows Changes to coastal water movement</p>	<p>These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the option and the European site, and sometimes, whether the option is up or downstream from the European site.</p>
<p>Toxic contamination Water pollution Soil contamination Air pollution</p>	<p>Air emissions associated with vehicular traffic during construction of options. This effect is only likely to be significant where the transport route to and from the option is within 200 metres of the boundary of the European site.</p> <p>Water pollution is only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the option and the European site, and if applicable, whether the option is up or downstream from the European site.</p> <p>Soil contamination is only considered likely to be significant where the boundary of the option extends into the European site.</p>
<p>Non-toxic contamination Nutrient enrichment (e.g. of soils and water) Algal blooms Changes in salinity Changes in thermal regime Changes in turbidity Changes in sedimentation/silting Air pollution (dust)</p>	<p>Changes to water salinity, nutrient levels, turbidity, thermal regime due to water abstraction, storage, or inter-catchment transfers.</p> <p>These effects are only likely to be of significance where the boundary of the option extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the option and the European site. This level of information is not available until data such as groundwater modelling is collected to accompany planning applications.</p> <p>Emissions of dust during the earthworks, construction of plant and tunnel/pipeline construction associated with options.</p>
<p>Biological Disturbances Direct mortality Changes to habitat availability Out-competition by non-native species Selective extraction of species Introduction of disease Introduction of invasive species</p>	<p>Potential for changes to habitat availability, e.g. reductions in wetted width of rivers leading to desiccation of macrophyte beds due to changes in abstraction or reduced compensation flow.</p> <p>This effect is only likely to be significant where the receiving water for the option is the European site or a tributary of the European site.</p>

Broad categories of potential impacts on European sites (with examples)	Examples of operations resulting in impacts
Rapid population fluctuations Natural succession	

F.2.4 Stage 1 – Step 3: Outcomes

No LSE

If Screening concludes ‘No likely significant effects’ the HRA process for that option ends here. The option will be taken forward into the multi-criteria optimisation and programme appraisal.

Potential for LSE

If Screening concludes ‘Potential for likely significant effects’ either alone or in combination with other projects, plans or policies, or effects are uncertain, and the option is selected within the Programme Appraisal, HRA Stage 2: Appropriate Assessment is required.

F.2.5 Stage 1: Dealing with uncertainty

Due to its wide geographic scale and long-term outlook, there are inevitably a large number of uncertainties within WRSE options analysis. With strategy-level HRAs, uncertainty is sometimes addressed by including caveats or mitigation as an assumption to the plan (and therefore all the plan components) to ensure that significant or adverse effects will not occur.

In order to minimise uncertainties, Screening will use a precautionary approach by determining all uncertainties as having potential to result in LSE. Also, as required by recent case law, mitigation measures and their effects will not be considered at Screening stage.

Where an option has been screened in as having potential LSE based on uncertainty over likely effects, then this option will be brought forward to Stage 2 if considered for the preferred list of options. At the Appropriate Assessment stage, additional data will be obtained until that uncertainty can be resolved, or mitigation specified that will remove the uncertainty and/or the adverse effect. If residual impacts remain after the application of appropriate mitigation, then it will be recommended that the option not included in the final options list.

Screening therefore aims to identify potential LSE and makes use of typical screening terminology (e.g. the term ‘LSE’ in itself) to facilitate this, even if it is not reaching a formal conclusion regarding the option. Ultimately, the Screening process is looking to highlight those options which have a risk of significant or adverse effects on a European site which will be assessed in more detail at Stage 2.

F.3 Stage 1.5: Scoping the Appropriate Assessment

Assuming that Screening has identified LSE, then it will be necessary to scope the Appropriate Assessment stage, in consultation with Natural England. This will be carried out for any constrained options which have the potential for LSE and will be undertaken once the constrained list of options has been identified.

Screening and Scoping of AA can be presented as one document, or two individual reports. Once Stage 1 has been completed and the results provided, the scoping report will:

- Outline the envisaged Appropriate Assessment methodology (Section 1.4 onwards).
- Agree the evidence base for European Sites.
- Confirm the Screening process undertaken.
- Understand the LSE as clearly as possible, e.g. temporary or permanent, direct or indirect, short- or long-term effect etc.
- Consider how and at what stage mitigation should be considered.
- Consider the availability of information, and where it will come from.
- Decide on an appropriate consultation period.
- Consider any other organisations to be involved. For instance, the Environment Agency.

Once the scope of the Appropriate Assessment has been agreed with Natural England (and other organisations, as required) options coming forward through the wider selection process would then undergo Appropriate Assessment.

F.4 Stage 2: Appropriate Assessment

The Habitats Regulations require that the assessment is of *'the implications for the site and the site's conservation objectives.'* Therefore, the Appropriate Assessment will consider the potentially damaging impacts of the project, and the potential effects on the European Site features and achievement of its conservation objectives. This will be in greater detail than at Screening. The impacts will be characterised in terms of their likelihood, nature, scale, severity and duration. The overall objective of the assessment is to determine if there will be a significant adverse effect on site integrity and is dependent on-site specifics including condition status and conservation objectives.

F.4.1 Stage 2 – Step 1: Refining the Zone of Influence (Zoi)

Using option specific information, the Zoi of the option would then be refined depending on the characteristics of the proposed option, specifications, duration of works and relationship to European sites. This in turn will allow for greater clarity in the assessment for determining the potential effects.

F.4.2 Stage 2 – Step 2: Determining adverse effects on integrity

In conducting the Appropriate Assessment, the potential for adverse effects on site integrity of the options screened-in during the Screening assessment will be reviewed in greater detail. This requires the following steps to be undertaken and within the Appropriate Assessment:

1. Assessment of the European sites' characteristics and identification of their conservation objectives.
2. Re-evaluation of impacts from each option, with a focus on the potential impacts included in UK Water Industry Research guidance as detailed in Table 8.2.
3. Assessment of whether the options have the potential to result in adverse effects on the integrity of European sites, as defined by their conservation objectives and status.
4. Adverse effects on site integrity depends on the scale and magnitude of the impacts. Assessment would therefore consider the distribution of the qualifying features across the site in relation to the predicted impacts, timing, duration, and the level of understanding of the effect. Professional judgement can be used where appropriate, although in some cases there may not be sufficient information available to make the assessment.

5. Identification of appropriate mitigation and monitoring measures to avoid adverse effects if level of design detail allows.
6. Summary of outcomes from the Appropriate Assessment for each option, including an outcomes table outlining qualifying features of the European sites from which adverse impacts cannot be excluded; adverse impacts can be excluded; or adverse impacts can likely be excluded following recommended mitigation measures or following further assessment at project-stage.

This process is sometimes referred to as the Integrity Test.

Mitigation Measures

The Appropriate Assessment should consider potential mitigation measures. These should include 'standard' measures, and those required to eliminate LSE. Mitigation should be realistic and can be designed both to avoid and reduce impacts. The Mitigation Hierarchy will be employed; best practice recommends avoiding impacts at source, over mitigating impacts at the receptor.

Monitoring

Details of recommended monitoring will be described. This could be to validate the Appropriate Assessment, or to provide a baseline against which any adverse impacts could be recorded, and projects stopped, paused, and altered as appropriate.

F.4.3 Stage 2 – Step 3: Assessing in-combination effects

The HRA process requires that the potential effects of other projects, plans or options also be considered 'in-combination'. In-combination effects refer to cumulative effects caused by the planning solutions that are currently under consideration together with the effects of any existing or proposed projects or plans, so that it can be established whether there may be an overall significant effect on the integrity of a European site.

The guidance is limited in its definition of an in-combination effect, therefore broadly it is considered that the following in-combination effects may occur:

1. Effects within the current plan - i.e. separate options within the WRMP affecting the same European site(s)
2. Effects between plans - i.e. effects with other abstractions, in association with or driven by other plans (for example, Anglian Waters Drought Plan or other Water Company WRMPs which border the Anglian Water region)
3. In-combination water resource effects from the Environment Agency Review of Consents process
4. In-combination effects with Local Planning Authority Local Plans or Local Development Frameworks (LDFs)

In-combination effects will be fully assessed as part of this process. The assessment will account for the nature of the process, whereby options will come forward in groups named either portfolios or programmes. These will be suites of potential options, that may be taken forward through the selection process. Appropriate Assessment will therefore include assessment of the individual options, an in-combination assessment of all those options within the portfolio/programme, and in combination with other projects, plans and policies as described above.

F.4.4 Stage 2: Dealing with uncertainty

To minimise assumptions and to reduce uncertainty, the Stage 1: Screening will use a precautionary approach by screening all uncertainties as having the potential to result in adverse effects and by not considering mitigation which could be applied to reduce the impact of the option. Where an option is screened in as having potential adverse effects based on uncertainty, this option will be brought forward to Stage 2 if it was included as part of the planning solutions. At the Appropriate Assessment stage, an attempt will be made to address the potential impacts in further detail, until that uncertainty can be resolved. If resolution is not been possible, a discussion of appropriate mitigation that has the potential to remove the uncertainty is required. If it is concluded that adverse effects may still remain after the application of appropriate mitigation, then it will be recommended that the option be subject to further assessment through a project-stage HRA based on detailed design and appropriate collection of further data.

The precautionary principle will continue to be applied within this assessment, with adverse effects assumed if information or evidence is lacking to conclude otherwise. The Appropriate Assessment will be as rigorous as possible, although it is accepted that there may be gaps in the information used to inform the assessment process. Limitations should be acknowledged, and the Integrity Test should take into account the Precautionary Principle. If there is insufficient information to demonstrate no adverse effects, then the option will not go ahead (subject to provision of over-riding public interest).

F.5 Stage 3: Consideration of alternatives

Within the HRA process, if the Appropriate Assessment concludes that an option would have adverse effects on site integrity, and no mitigation would be able to ameliorate such impacts, then alternative options should be considered. Any alternatives would need to be reviewed using the same Screening assessment and if applicable, scoping and Appropriate Assessment. All realistic alternatives must be considered, and none can be discounted on ground of excessive cost.

As has already been described, any options that cannot be demonstrated as having no adverse effect on site or species integrity at Appropriate Assessment will not be progressed any further. The volume of potential options coming forward through the selection process will in effect simulate the consideration of alternatives.

F.6 Stage 4: Imperative reasons of overriding public interest

Finally, if no alternatives are available and the option is of strategic need, then it would be necessary to determine whether to seek justification for the scheme because of Imperative Reasons of Overriding Public Interest (IROPI). It is highly unlikely that any options will be subject to this stage of assessment and it is considered a last resort.