

Southern Water Services draft Water Resource Management Plan 24 Strategic Environmental Assessment Environmental Report

October 2022
Version 2



from
**Southern
Water** 

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Abbreviations

| | |
|-------------------------|--|
| AONB | Area of Outstanding Natural Beauty |
| AQMA | Air Quality Management Areas |
| BNG | Biodiversity Net Gain |
| CAMS | Catchment Abstraction Management Strategy |
| CCRA | Climate Change Risk Assessment |
| CFMP | Catchment Flood Management Plans |
| CPRE | The Countryside Charity formerly known as the Council for the Protection of Rural England |
| CROW | Countryside and Rights of Way |
| CO₂ | Carbon Dioxide |
| DLUHC | Department for Levelling Up, Communities and Housing, formerly Ministry of Housing, Communities and Local Government (MHCLG) |
| 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 |
| MPA | Marine Protected Area |
| 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 |
| HRA ToLS | Habitats Regulations Assessment Test of Likely Significance |
| UK | United Kingdom |
| UKCP18 | UK Climate Projections 2018 |
| UN | United Nations |
| UNESCO | United Nations Educational, Scientific and Cultural Organisation |
| WFD | Water Framework Directive |
| WRMP | Water Resource Management Plan |
| WRZ | Water Resource Zone |
| WRSE | Water Resources South East |

Non-Technical Summary

Overview

Southern Water Services (SWS) is preparing its next Water Resource Management Plan (WRMP24). The WRMP sets out how the balance between water supply and demand, and security of supply, will be maintained over a minimum of 25 years in a way that is economically, socially and environmentally sustainable. WRMPs are reviewed on a rolling five-year basis, the most recent being published in 2019.

WRMPs must comply with international, UK and national legislation pertaining to the environment, as well as associated guidance on the development of WRMPs¹. This includes *The Environmental Assessment of Plans and Programmes Regulations 2004* (the 'Strategic Environmental Assessment (SEA) Regulations'). SEA is a process that identifies, describes and evaluates the likely significant environmental effects of the WRMP24. It seeks to avoid, manage or mitigate any significant negative effects and to enhance any positive ones.

This Non-Technical Summary (NTS) provides an overview of the Environmental Report produced as part of the SEA of the draft WRMP24. The Environmental Report represents the second formal output of the SEA of the draft WRMP24 following the scoping technical note which was issued to SEA consultation bodies in February 2022. The SEA is being carried out to identify, describe and evaluate the likely significant environmental effects of the draft WRMP24 and to identify ways in which adverse effects can be avoided, minimised or mitigated and how any positive effects can be enhanced.

The Environmental Report presents the findings of the SEA and is being issued for consultation alongside the draft WRMP24. The following sections of this NTS:

- provide an overview of the draft WRMP24;
- describe the SEA process together with how it is to be applied to the draft WRMP24 taking into account the Regional Plan;
- present the relevant contextual information and outline the approach to completing the assessment of the draft WRMP24;
- summarise the findings of the SEA of the draft WRMP24, including cumulative effects and mitigation measures;
- outline the proposed monitoring measures; and
- set out the next steps in the SEA of the WRMP24.

Water Resource Management Plans

Each water company's WRMP sets out how the balance between water supply and demand, and security of supply, will be maintained over a minimum of 25 years in a way that is economically, socially and environmentally sustainable. This will include public water supply (PWS) and non-public water supply (non-PWS). The over-arching 'best value' planning objectives to meet statutory and policy requirements are:

- Deliver a secure and wholesome supply of water
- Deliver environmental and social benefit
- Increase the resilience of water systems
- Deliver at a cost that is acceptable to customers

Table NTS1 sets out these objectives and the associated criteria and metrics for the delivery of the WRMP².

¹ UK Government (2022) *Water Resource Planning Guideline* [online]. Available at: <https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline>.

² Draft Water Resources Management Plan 2024: Technical Report, October 2022, Version 0.1

Table NTS1 WRMP Objectives, Criteria and Metrics

| Best value objective | Criteria | Metric |
|---|--|--|
| Deliver a secure and wholesome supply of water to customers and other sectors to 2075 | Meet the supply demand balance | Public water supply – supply demand balance profile (Ml/d) Provides additional water needed by other sectors (Ml/d) |
| | Leakage | 50% reduction in leakage by each company by 2050 from 2017–18 baseline (%) % leakage reduction above 50% |
| | Water into supply | Distribution input (DI) per property (litres per day) |
| | Customer preference | Customer preference for option type (score) |
| | | |
| Deliver environmental improvement and social benefit | Strategic Environmental Assessment (SEA) | Programme benefit (score max) Programme disbenefit (score min) |
| | Natural capital | Enhancement of natural capital value (£m) |
| | Abstraction reduction | Reduction in the volume of water abstracted at identified sites (Ml/d) and by when (date) |
| | Biodiversity | Net gain score (%) |
| | Carbon | Cost of carbon offsetting (£m) |
| Increase the resilience of the region's water systems | Drought resilience | Achieve 1:500-year drought resilience (date achieved) |
| | Resilience assessment reliability | Programme reliability score |
| | Resilience assessment adaptability | Programme adaptability score |
| | Resilience assessment evolvability | Programme evolvability score |
| Deliverable at a cost that is acceptable to customer | Programme cost | Net present value (£m) using the social time preference rate (STPR) |
| | Inter-generational equity | Net present value (£m) using the long-term discount rate (LTDR) |

National guidance³ requires alignment of water company WRMPs with the regional plan. In consequence, SWS has worked with Water Resources South East (WRSE), a collaboration of the six⁴ water companies that supply water in south east England, to develop and apply a consistent framework for water resource plan development, with work split between the regional and company level. This included the following stages:

1. Prepare supply-demand balance information
2. Develop a list of options that considers government policy and aspirations
3. Undertake problem characterisation and evaluate strategic needs and complexity
4. Decide on a modelling method
5. Identify and define data inputs to model(s)
6. Undertake decision-making (options appraisal) modelling
7. Carry out sensitivity tests
8. Produce a final planning forecast.

³ UK Government (2022) *Water Resource Planning Guideline* [online]. Available at: <https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline>.

⁴ Affinity Water, Portsmouth Water, SES Water, South East Water, Southern Water and Thames Water

Steps 1-3 have primarily been undertaken by member water companies individually. WRSE has progressed steps 4-8 after agreeing on an approach with members and consulting on the overall method with other stakeholders.

In line with the steps identified, SWS has developed a supply-demand balance to identify those water resource zones⁵ (WRZs) in deficit over the lifetime of the plan (and so where additional water resources are required). The WRMP presents options for the resolution of the WRZ deficit. Option selection for the draft WRMP entails the following steps:

- Identification of an **unconstrained list** of options.
- Screening and filtering of the list against initial screening criteria to develop a **feasible list**. Options that are impractical or have unacceptable environmental or economic impacts are removed.
- Screening against final screening criteria to arrive at a **constrained list**. Constrained options are taken forward into the decision-making modelling process.
- **Environmental assessment** of the options as part of the Strategic Environmental Assessment (SEA), Habitats Regulations Assessment (HRA) and WFD assessment processes.

All of the options on the constrained options list are considered to be viable and potentially deliverable and are, therefore, made available for selection in the investment modelling process. The options selected by the investment model, under various planning scenarios in each WRZ, form the list of 'preferred options' in the WRMP.

Types of water resource management options considered to meet any forecast deficit in a WRZ can include:

- **Customer options** which include measures to manage the demand for water such as smart meters, rainwater harvesting, greywater recycling or household visits to install water efficiency measures;
- **Distribution options** which include measures to optimise the efficiency of water networks, reduce leakage and minimise any unscheduled resource losses;
- **Production options** include measures to increase the efficiency and effectiveness of treatment processes;
- **Resource management options** which include measures to increase supply such as greater peak output at existing groundwater sources, reservoir or surface water supply and which will include SROs; this also includes catchment management options, for example nature-based solutions;
- **Non-PWS options** which include any options which increase water resource availability or reduce the need for abstraction outside of that needed for public water supplies.

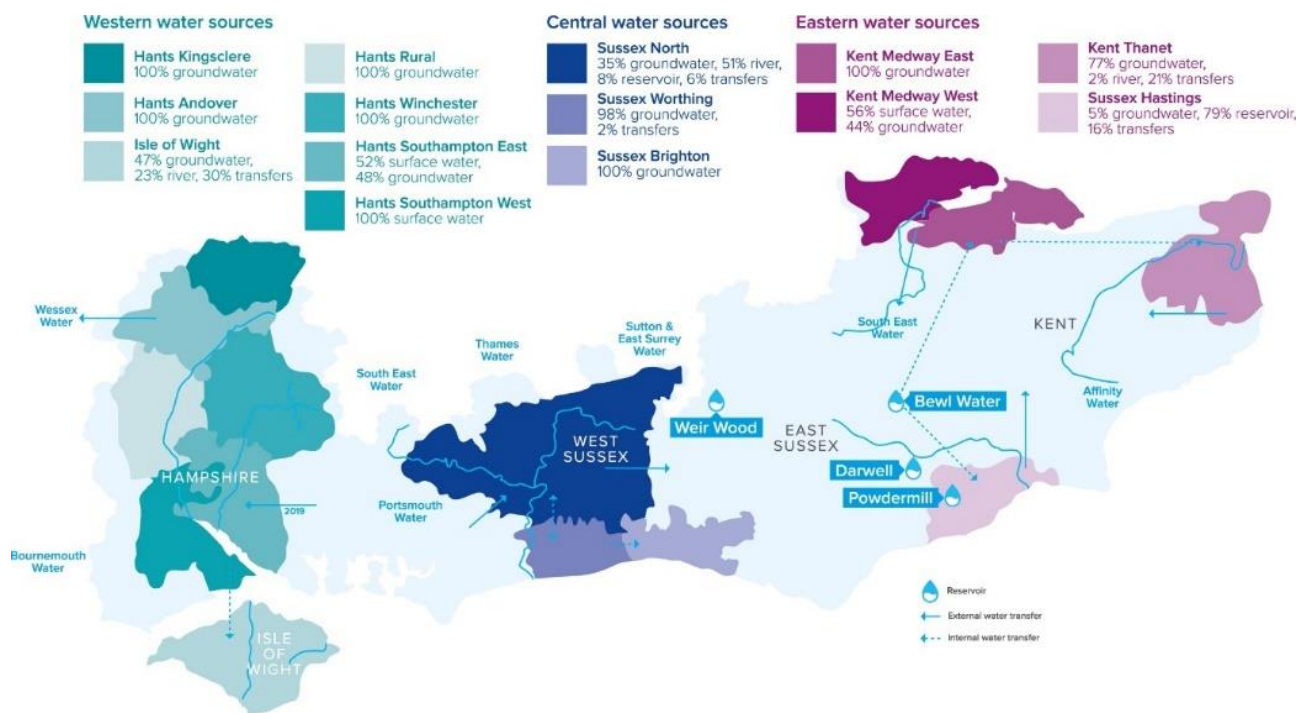
The preferred plan options that collectively comprise the proposed plan programme. In developing the preferred programme, consideration is given to alternative plan programmes (or pathways) developed in response to different scenarios, to resolve any supply deficits in relation to financial, environmental and social costing and, potentially, to facilitate water trading between companies.

SWS provides water supplies to just over 2.4 million customers across an area of 4,450km², extending from East Kent, through parts of Sussex, to Hampshire and the Isle of Wight in the west. The SWS region is divided into fourteen Water Resource Zones (WRZs) which are geographically separate and amalgamated into three larger, sub-regional areas (see **Figure NTS1**).

⁵ UK Government (2022) *Water Resource Planning Guideline [online]*. Available at: <https://www.gov.uk/government/publications/waterresources-planning-guideline/water-resources-planning-guideline>

Section 4.4. of the WRPG defines a water resource zone as "an area within which the sources of water and distribution of water to meet demand, is largely self-contained (with the exception of agreed bulk transfers)".

Figure NTS1 Southern Water's Supply Area



Water supplies are predominantly reliant on the transmission and storage of groundwater from the widespread chalk aquifer that underlies much of the region. This extends throughout parts of Kent, Sussex, Hampshire and the Isle of Wight; and makes up 70% of the total water supply. River abstractions account for 23% of the water supplies, most notably the Eastern Yar and Medina on the Isle of Wight, the Rivers Test and Itchen in Hampshire, the Western Rother and Arun in West Sussex, the River Eastern Rother and River Brede in East Sussex, and the River Teise, River Medway and Great Stour in Kent. Four surface water impounding reservoirs provide the remaining 7% of water supplies: Bewl Water, Darwell, Powdermill and Weir Wood. The total storage capacity of these four reservoirs amounts to 42,390MI. South East Water is entitled to 25% of the available supplies from the River Medway Scheme, which incorporates Bewl Water Reservoir.

SWS face challenges in its Western and Central Areas, as a result of implemented licence changes, and proposed further abstraction reductions to protect and enhance the environment. There are now limited opportunities to develop new 'conventional' sources of water such as abstraction from rivers or groundwater and instead SWS has provided an optimised programme of water efficiency, demand management and leakage reduction in conjunction with other sources of water.

SWS has identified the following WRZ as being in deficit over the lifetime of the plan:

Western Area – comprising the following seven WRZs:

- Hants Near Basingstoke (HKZ)
- Hants Andover (HAZ)
- Isle of Wight (IOW)
- Hants Rural (HRZ)
- Hants Winchester (HWZ)
- Hants Southampton East (HSE)
- Hants Southampton West (HSW)

Central Area – comprising the following three WRZs:

- Sussex North (SNZ)
- Sussex Worthing (SWZ)

- Sussex Brighton (SBZ)

Eastern Area – comprising the following four WRZs:

- Kent Medway East (KME)
- Kent Medway West (KMW)
- Kent Thanet (KTZ)
- Sussex Hastings (SHZ)

SWS has identified some 300 constrained options and following evaluation, 122 preferred supply options and seven demand management options have been selected for inclusion in the best value draft WRMP24. These are reflected in the strategies for each area.

Western Area strategy

- Reducing consumption by household customers in order to reduce average per capita consumption to less than 110 litres per person per day across the company by 2050
- Leakage reduction: reduce leakage so as to achieve a minimum 50% reduction in leakage across the company by 2050
- Catchment First: implementing a catchment solution to improve environmental resilience
- Hampshire Water Transfer and Water Recycling Project (a Strategic Resource Option)
- Recycling water at Sandown Water Treatment Works
- Recycling water at Woolston Water Treatment Works
- River Test Managed Aquifer Recharge
- Newbury groundwater option
- Romsey groundwater option
- Newchurch groundwater option
- Bulk imports – both continuation of existing imports and new transfers from Portsmouth Water and Thames Water
- Drought Interventions (Temporary Use Bans and Non-Essential Use Bans) and Test Drought Permit/Order

Central Area strategy

- Reducing consumption by household customers in order to reduce average per capita consumption to less than 110 litres per person per day across the company by 2050
- Leakage reduction: reduce leakage so as to achieve a minimum 50% reduction in leakage across the company by 2050
- Recycling at Littlehampton Water Treatment Works
- Recycling at Horsham Water Treatment Works
- Desalination on the Sussex Coast
- River Adur Offline Reservoir
- Pulborough groundwater option
- Western Rother licence change and water storage
- Bulk transfers – both continuation of existing import and new transfer from Portsmouth Water, SES Water and South East Water
- Drought Interventions (Temporary Use Bans and Non-Essential Use Bans) and Pulborough, North Arundel and East Worthing Drought Permit/Orders

Eastern Area strategy

- Reducing consumption by household customers in order to reduce average per capita consumption to less than 110 litres per person per day across the company by 2050
- Leakage reduction: reduce leakage so as to achieve a minimum 50% reduction in leakage across the company by 2050

- Recycling at Medway Water Treatment Works
- Recycling at Hastings Water Treatment Works
- Desalination on the East Thanet Coast
- Desalination on the Thames Estuary
- Desalination on the Isle of Sheppey
- Recommissioning of Gravesend groundwater source
- Reconfiguration of Rye groundwater source
- Raising Bewl Reservoir
- Bulk transfers – both continuation of existing import and new transfer from Affinity Water and South East Water
- Drought Interventions (Temporary Use Bans and Non-Essential Use Bans) and River Medway Scheme and Sandwich Drought Permit/Orders

The preferred options are presented in **Appendix E**.

Strategic Environmental Assessment

SEA is required under Statutory Instrument 2004 No.1633 - The Environmental Assessment of Plans and Programmes Regulations 2004. Throughout the course of the development of the plan, policy or programme, the aim of SEA is to identify the potential impact of options proposed in the plan in terms of their environmental, economic and social effects. If any adverse effects are identified, these options can then be avoided, or proposals modified to manage or mitigate adverse effects.

In this context, the purpose of the SEA of the draft WRMP24 is to:

- identify the potentially significant environmental effects of the draft plan in terms of the water resource management options being considered;
- help identify appropriate measures to avoid, reduce or manage adverse effects and to enhance beneficial effects associated with the implementation of the draft plan wherever possible;
- give the statutory SEA bodies, stakeholders and the wider public the ability to see and comment upon the effects that the draft plan may have on them, and encourage them to make responses and suggest improvements to the draft plans; and
- inform the selection of water resource management options to be taken forward into the final versions of the plan.

SEA comprises five key stages:

- **Stage A:** Scoping;
- **Stage B:** Develop and Refine Alternatives and Assess Effects;
- **Stage C:** Prepare Environmental Report;
- **Stage D:** Consult on the Draft Plan and Environmental Report and Prepare the Post Adoption (SEA) Statement; and
- **Stage E:** Monitor Environmental Effects.

Stage A of the SEA of the WRMP24 has been summarised in the scoping technical note. The scoping stage itself comprises five tasks that are listed below:

- i. Review of other relevant policies, plans, programmes and strategies (hereafter referred to as 'plans and programmes').
- ii. Collation and analysis of baseline information.
- iii. Identification of key sustainability issues.
- iv. Development of the assessment framework.
- v. Consultation on the scope of the SEA (this Scoping Report).

The scoping technical note set out the approach to assessing the likely significant environmental effects of the draft WRMP24. It was issued for scoping consultation for 5 weeks from 21st February to 27th March 2022.

The effects (including cumulative effects) of the water resource options contained in the draft WRMP24 and any reasonable alternatives have then been assessed (**Stage B**).

These assessments are presented in this Environmental Report (in a form to meet the requirements of Schedule 2 of the SEA Regulations) which has been completed to accompany the draft WRMP24 (**Stage C**).

The draft WRMP24 and accompanying documents including the Environmental Report will then be submitted to the Secretary of State for Environment, Food and Rural Affairs, for a request for publication and once directed to do so, SWS will publish the documents for consultation (**Stage D**). Following consultation, and within 26 weeks of consultation beginning, SWS will need to prepare a Statement of Response to the representations received. The revised draft WRMP24 will be sent to the Government, and if changes are likely to be significant, is likely to be subject to further assessment and consultation. Following direction from the Government, the final WRMP24 will be published and implemented accordingly (anticipated August 2023). In conjunction with publishing the final WRMP24, a Post Adoption Statement will also be issued (to meet the requirements of SEA regulation 16 (4)). This will set out the results of the consultation and SEA processes and the extent to which the findings of the SEA have been accommodated in the final plan.

The SEA requires monitoring of any resulting environmental effects of the WRMP24 (**Stage E**).

Water Resource South East Regional Plan Environmental Assessment

SWS is developing its WRMP24 within the context of the WRSE Emerging Regional Plan⁶. WRSE is a collaboration of the six⁷ water companies that supply water in south east England. The Regional Plan looks beyond the boundaries of individual companies and identifies options that will deliver the most benefit across the region.

The interactions and the need for consistency between the regional plans and the WRMPs, and between regions has driven development of new approaches and methodologies in the preparation of water resources plans. In this regard, WRSE commissioned the development of a new integrated environmental appraisal process to provide a consistent framework for environmental assessments for WRMP24. The method⁸ has been developed taking into account the guidance from the EA and uses an integrated approach covering SEA, Habitat Regulations Assessment (HRA), Water Framework Directive (WFD) assessment, Natural Capital Assessment (NCA) and Biodiversity Net Gain (BNG). It was subject to consultation in 2020 and has been revised⁹.

The revised environmental assessment methodology provides the approach to assessment for water companies when undertaking their WRMP24 regulatory environmental assessments. In consequence, a large amount of the supporting information required for SWS draft WRMP24 SEA has been produced as part of the regional plan environmental assessments. In summary, this SEA uses the WRSE SEA assessment methodology to complete:

- an assessment of the likely significant effects of the constrained options for each of SWS WRZs in deficit;

⁶ WRSE (2022) *Futureproofing our water supplies: A Consultation On Our Emerging Regional Plan For South East England*. Available at: <https://wrse.uk.engagementhq.com/the-proposed-solution>.

⁷ Affinity Water, Portsmouth Water, SES Water, South East Water, Southern Water and Thames Water

⁸ WRSE (2020) *WRSE Method Statement: Environmental Assessment* Consultation version July 2020. Available at: https://www.wrse.org.uk/media/wjig1mdu/wrse_file_1329_wrse-ms-environmental-assessment.pdf

⁹ WRSE (2021), *Method Statement: Environmental Assessment Post-consultation version*, November 2021. Available at: https://www.wrse.org.uk/media/wjig1mdu/wrse_file_1329_wrse-ms-environmental-assessment.pdf

- an assessment of the effects of the preferred options/programme of options and any identified alternative plan pathways;
- an assessment of the cumulative effects with other infrastructure proposals or plans will be considered and assessed including, in particular, other water company WRMPs, the Regional Plan and SROs.

What are the Key Environmental Issues for the WRMP24?

The key environmental issues relevant to the assessment of the draft WRMP24 have been identified from a variety of sources, including a review of baseline data, other relevant plans and programmes and the WRSE work. A summary of the issues identified as being most relevant to the assessment of the draft WRMP24 are shown in **Table NTS2**.

Table NTS2 Key Environmental Issues

| SEA topic | Opportunities |
|-------------------------------|---|
| Biodiversity, Flora and Fauna | <p>The key sustainability issues arising from the baseline assessment for biodiversity are:</p> <ul style="list-style-type: none"> ■ The need to protect or enhance and support the achievement of favourable condition and conservation status WRMP24 area's biodiversity, particularly within designated sites, species and habitats of principal importance, informed by the evidence base. ■ The need to consider the implications of effluent re-treatment options on existing discharges from wastewater treatment works and the consequences for nutrients within receiving waters. ■ The need to avoid activities likely to cause irreversible damage to natural heritage. ■ The need to take opportunities to improve connectivity between fragmented habitats to create functioning habitat corridors and habitat patches or stepping stones. ■ The need to take opportunities to deliver biodiversity net gains. ■ The need to control the spread of Invasive Non-Native Species (INNS). ■ The need to recognise the importance of building wildlife's resilience to, and allowing wildlife to adapt to climate change. ■ The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services. |
| Water | <p>The key issues arising from the baseline assessment for water are:</p> <ul style="list-style-type: none"> ■ The need to further improve the quality of the regions river, estuarine, wetlands and coastal waters taking into account WFD objectives. ■ The need to maintain the quantity and quality of groundwater resources taking into account WFD objectives. ■ The need to improve the resilience, flexibility and sustainability of water resources in the WRMP24 area, particularly in light of potential climate change impacts on surface water and groundwaters. ■ The need to ensure sustainable abstraction to protect the water environment and meet society's needs for a resilient water supply. ■ The need to ensure that people understand the value of water. |

| SEA topic | Opportunities |
|--|---|
| Soil | <p>The key sustainability issues arising from the baseline assessment for soil, geology and land use are:</p> <ul style="list-style-type: none"> ■ The need to protect and enhance geological features of importance (including geological SSSIs). ■ The need to maintain and enhance soil function and health, including its role as a carbon sink. ■ The need to manage the land and soil more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources and best and most versatile soils). |
| Air | <p>The key sustainability issues arising from the baseline assessment for air are:</p> <ul style="list-style-type: none"> ■ The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards. |
| Climatic Factors | <p>The key sustainability issues arising from the baseline assessment for climatic factors are:</p> <ul style="list-style-type: none"> ■ The need to reduce greenhouse gas emissions (industrial processes and transport). ■ The need to adapt to the impacts of climate change for example through, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities afforded by climate change. |
| Population, Communities and Human Health | <p>The key sustainability issues arising from the baseline assessment for population and human health are:</p> <ul style="list-style-type: none"> ■ The need to ensure water supplies remain affordable especially for deprived or vulnerable communities, reflecting the importance of water for health and wellbeing. ■ The need to ensure water supplies contribute to improvements in levels of health, particularly in urban areas and deprived areas. ■ The need to ensure water quantity and quality is maintained for a range of uses including tourism, recreation, navigation and other use such as agriculture. ■ The need to ensure a balance between different aspects of the built and natural environment that will help to provide opportunities for local residents and tourists, including opportunities for access to, protecting and enhancing recreation resources, green infrastructure and the natural and historic environment. ■ The need to accommodate an increasing population and housing growth through provision of essential services including water supply. ■ Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and wellbeing and the economy. ■ The need to reduce the risk of harm from environmental hazards, such as flooding and drought. |
| Historic Environment | <p>The key sustainability issues arising from the baseline assessment for archaeology and cultural heritage are:</p> |

| SEA topic | Opportunities |
|-----------------|---|
| | <ul style="list-style-type: none"> ■ The need to conserve or enhance sites of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment. ■ The need to protect water-dependent heritage sites during drought and flood conditions. |
| Landscape | <p>The key sustainability issues arising from the baseline assessment for landscape and visual amenity are:</p> <ul style="list-style-type: none"> ■ The need to protect and improve the natural beauty of the area's AONBs, National Parks and other areas of natural beauty. ■ The need to protect and improve the character of landscapes and townscapes. |
| Material Assets | <p>The key sustainability issues arising from the baseline assessment for material assets and resource use are:</p> <ul style="list-style-type: none"> ■ The need to minimise the consumption of resources, including water and energy. ■ The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill. ■ The need to continue to reduce leakage from the water supply system to help reduce demand for water. ■ Daily consumption of water is relatively high and consequently there is a continued need to encourage more efficient water use by consumers. |

Section 2 of the Environmental Report summarises the review of plans and programmes relevant to the draft WRMP24 and SEA that is contained at Appendix C.

Section 3 presents the baseline analysis of characteristics, along with how these are likely to change in the future.

How the Effects of the draft WRMP24 Have Been Assessed

The WRSE developed assessment framework has been used to assess the environmental effects of the draft WRMP24. The assessment framework sets out 14 assessment objectives relating to the key issues identified in **Table NTS2**. For each objective, guide questions are provided.

The performance of the constrained, preferred options/preferred programme within the draft WRMP24 and any reasonable alternatives have been assessed against these objectives to ensure that each option is assessed in a robust and consistent manner. The assessment framework is shown in **Table NTS3**.

Table NTS3 SEA Topic and Assessment Objectives

| SEA Topic | SEA Objective |
|-------------------------------|--|
| Biodiversity, flora and fauna | Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) |
| Soil | Protect and enhance the functionality, quantity and quality of soils |
| Water | Increase resilience and reduce flood risk |
| | Protect and enhance the quality of the water environment and water resources |
| | Deliver reliable and resilient water supplies |
| Air | Reduce and minimise air emissions |
| Climatic Factors | Reduce embodied and operational carbon emissions |
| | Reduce vulnerability to climate change risks and hazards |
| Landscape | Conserve, protect and enhance landscape, townscape and seascape character and visual amenity |
| Historic Environment | Conserve, protect and enhance the historic environment, including archaeology |
| Population and Human Health | Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing |
| | Maintain and enhance tourism and recreation |
| Material Assets | Minimise resource use and waste production |
| | Avoid negative effects on built assets and infrastructure |

The draft WRMP24 constrained and preferred options have been assessed based on the nature of the effect, its timing and geographic scale, the sensitivity of the human or environmental receptor that could be affected, and how long any effect might last. Specific guidance has been developed for what constitutes either a neutral, minor, moderate or major positive or negative effect for each of the SEA objectives. These 'definitions of significance' have helped to ensure a consistent approach to interpreting the significance of effects and will help the reader understand the decisions made by the assessor. Assessment matrices have been used to capture the assessment of each measure in a consistent manner.

Section 4 of the Environmental Report provides further information in relation to the approach to the assessment of the draft WRMP24.

Principal Outcomes of the Assessment

Section 5 and 6 of the Environmental Report provides further information in relation to the assessment of the draft WRMP24.

The assessment of each of the 318 constrained options is presented in **Appendix I**.

Some 122 preferred supply options relating to WRZ deficits have been shortlisted to support the delivery of WRMP24. The assessment of each of the preferred options is presented in **Appendix H**.

Table NTS3 summarises the likely significant effects (positive and negative) which have been identified in respect of various preferred options, presented by WRZ, water transfer schemes and catchment management. These are post-mitigation effects and, if taken forward, would require the application of additional mitigation measures with the aim of reducing the significant effects to a more acceptable state. Some of the significant effects may not be able to be further mitigated.

The following Likely Significant Effects have been identified:

Significant negative effects relate to human health & well-being in the operation phase (SWZ, SBZ, KME, KMW, KTZ, SHZ, HAZ, HKZ, HRZ and IOW) and biodiversity (KME) and climatic factors [carbon emissions] in the construction phase (KME) and biodiversity (KTZ).

Significant positive effects relate to reliable water supplies in the operation phase, in respect of schemes within SBZ and KMW.

Tables NTS4 summarises, by SEA Topic, the likely significant effects identified by WRZ.

Table NTS4 Significant Effects Identified by SEA Topic and Objective

| SEA Topic | SEA Objective | Significant Effects Identified |
|-------------------------------|--|--|
| Biodiversity, flora and fauna | Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_HSE_RE-DRO_ALL_ALL_si_can2 ■ SWS_HSE_RE-DRO_ALL_ALL_si_ott2 ■ SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi |
| Soil | Protect and enhance the functionality, quantity and quality of soils | No significant effects have been identified. |
| Air | Reduce and minimise air emissions | No significant effects have been identified. |
| Water | Increase resilience and reduce flood risk | No significant effects have been identified. |
| | Protect and enhance the quality of the water environment and water resources | No significant effects have been identified. |
| | Deliver reliable and resilient water supplies | Significant positive effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_KMW_RE-DRO_ALL_ALL_si_bew2 ■ SWS_HSW_HI-ROC_WT1_ALL_cpy_tst_60 ■ SWS_HSE_HI-TFR_T2S_CNO_spar to ott 120 pot |

| SEA Topic | SEA Objective | Significant Effects Identified |
|-----------------------------|--|---|
| Climatic Factors | Reduce embodied and operational carbon emissions | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_KME_HI-DES_ALL_ALL_ios10 ■ SWS_KME_HI-DES_ALL_ALL_ios20 Isle of Sheppey Desalination Plant 20M/d ■ SWS_KME_HI-DES_ALL_ALL_ios20_p2 ■ SWS_SBZ_HI-DES_ALL_ALL_shom40 |
| | Reduce vulnerability to climate change risks and hazards | No significant effects have been identified. |
| Landscape | Conserve, protect and enhance landscape, townscape and seascape character and visual amenity | Significant negative effects are identified in respect of option: <ul style="list-style-type: none"> ■ SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm |
| Historic Environment | Conserve, protect and enhance the historic environment, including archaeology | No significant effects have been identified. |
| Population and Human Health | Maintain and enhance the health and wellbeing of the local community | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_SNZ_RE-OTH_ALL_ALL_neub-sn ■ SWS_SWZ_RE-OTH_ALL_ALL_neub-sw ■ SWS_SBZ_RE-OTH_ALL_ALL_neub-sb ■ SWS_SHZ_RE-OTH_ALL_ALL_neub-sh ■ SWS_HSE_RE-OTH_ALL_ALL_neub-hse ■ SWS_KME_RE-OTH_ALL_ALL_neub-kme ■ SWS_KTZ_RE-OTH_ALL_ALL_neub-kt ■ SWS_IOW_RE-OTH_ALL_ALL_neub-iw ■ SWS_HAZ_RE-OTH_ALL_ALL_neub-ha ■ SWS_HKZ_RE-OTH_ALL_ALL_neub-hk ■ SWS_HRZ_RE-OTH_ALL_ALL_neub-hr ■ SWS_HWZ_RE-OTH_ALL_ALL_neub-hw ■ SWS_HSW_RE-OTH_ALL_ALL_neub-hsw ■ SWS_KMW_RE-OTH_ALL_ALL_neub-kmw |
| | Maintain and enhance tourism and recreation | No significant effects have been identified. |
| Material Assets | Minimise resource use and waste production | No significant effects have been identified. |
| | Avoid negative effects on built assets and infrastructure | No significant effects have been identified. |

Seven demand management options have been assessed relating to:

- SWS_[RZ]_T100_Policy_Regulation - Implementation of changes to regulation and policy on building standards and appliances (All resource zones)
- SWS_[RZ]_T100_Water Audit - Water Audit Programme (All Resource Zones)
- SWS_[RZ]_T100_Marketing_Comms - Marketing and comms campaign (All resource zones)
- SWS_[RZ]_T100_Education - Education campaign (All resource zones)
- SWS_T100 Tariffs (all) - Roll out of smart tariffs across the company (All resource zones)

- SWS_T100 Products and innovation (all) - Supply of water efficiency products and services (All resource zones)
- SWS_T100 Smart Metering (all) - Roll out of smart metering (All resource zones)

The assessment of the above options is presented in section 5.3 (with the full assessment tables in **Appendix G**). No significant environment effects have been identified.

Cumulative Effects

The likely cumulative effects associated with clusters of options (by WRZ, water transfer scheme and catchment management) reveal likely significant positive effects associated with the delivery of reliable and resilient water supplies, and likely significant negative effects associated with biodiversity and carbon emissions (with options presented in **Table NTS3**), although there are potentially others, albeit with some uncertainty, due to the stage of plan development.

Cumulative Effects with Existing Relevant Plans, Programme and Projects

Cumulative effects have been considered in respect of:

- Regional and water resource management plans;
- Other plans (Environment Agency National Drought Plan, RBMPs, Shoreline Management Plans);
- Strategic level projects.

No additional cumulative effects are anticipated in relation to these plans or projects.

Section 7 of the Environmental Report provides further information in relation to the assessment of the cumulative effects of the draft WRMP24.

Mitigation Measures

Mitigation may be defined as a measure to limit the effect of an identified significant impact or, where possible, to avoid the adverse impact altogether. Consideration of mitigation measures has been an integral part of the SEA process and has informed development of the WRMP24. The assessments set out this Environmental Report (and its appendices) identify the residual impacts, i.e. those impacts likely to remain after the implementation of reasonable mitigation measures such as operation of water sources in line with regulatory requirements and the use of good construction practice, including measures such as:

- Invasive species on site are to be identified and removed in advance of construction;
- HGV routing, cap on movements, appropriate working hours;
- Screening around the perimeter of works at the start of construction (creation of landscaping/planting for large scale construction);
- Footpath diversions established regarding construction work including pipelines;
- Resources for construction of the scheme would be sourced locally where possible;
- Minimising removal of spoil from construction sites;
- Runoff from the construction sites would be attenuated and the quality managed according to best construction practices;
- Appropriate pipeline laying techniques regarding river crossings;
- Flood risk management during construction (temporary flood defence and siting of spoil and contaminants away from areas at risk of flooding);
- Siting of temporary and permanent works to minimise impacts on setting of heritage and landscape features;
- Archaeological watching briefs during excavation;
- Noise abatement barriers where required;
- Dust control measures: dampening dust emissions from groundworks and vehicle washing.

The mitigation measures described above would, in some cases, be implemented through Environmental Impact Assessment (EIA) and planning process. In this way, effective mitigation plans can be developed to minimise many of the residual adverse effects currently identified in the SEA appraisals.

Section 8 of the Environmental Report provides further information in relation to the assessment of the cumulative effects of the draft WRMP24.

Role of the SEA in developing the WRMP24

The SEA, along with the findings of the HRA and WFD assessment, have been used to help inform the development of the draft WRMP24, and enable the consideration of reasonable alternative options for inclusion in the plan and/or alternative phasing of implementing the different options. In summary, the application of these processes has:

- Informed dialogue with the Environment Agency and Natural England as to the options to be included in the WRMP24.
- Identified a small number of options that have been excluded from the WRMP24 due to environmental and other concerns.
- Identified a number of HRA risks.

Monitoring the Effects of the WRMP24

SWS will need to take a broad view of the findings of their ongoing monitoring processes to identify whether WRMP24 has any significant unforeseen effects. Where these are identified, SWS may be required to put in place specific monitoring arrangements and will consider how best to mitigate or avoid the adverse consequences.

The natural, built and human receptors potentially impacted by the development and operation of the options included in the WRMP24 strategies and possible indicators of effects are set out in **Table NTS5**. These proposed indicators would form the core component of a monitoring programme to assess whether the identified effects in the SEA are occurring as anticipated, or whether it is giving rise to greater or lesser effects (adverse or beneficial). In turn, the monitoring may identify changes to the mitigation measures necessary to minimise adverse effects and/or modifications to scheme design or operation to further augment beneficial effects.

As options are brought forward for development, further specific monitoring requirements may be set out in detailed designs and plans accompanying scheme development (including, where applicable, formal applications for any required environmental permits or abstraction licences, planning permission, as well as any scheme-specific HRA and WFD assessments). These will be discussed with relevant regulatory and statutory bodies and stakeholders to agree the appropriate scale and duration of such scheme-specific monitoring activities proportionate to the assessed environmental risks.

Table NTS5 SEA monitoring indicators for WRMP24

| Impacted receptor | Monitoring indicators | Source(s) of Information |
|--|--|--------------------------|
| Water resources, water quality, biodiversity | Proportion of surface waters and groundwater waterbodies at 'Good' WFD status | Environment Agency |
| | Specific species and habitats surveys | SWS/Natural England |
| | Condition of European Sites and SSSIs according to Natural England condition assessments | Natural England |
| | Progress against the Southern Water biodiversity action plan | SWS |

| Impacted receptor | Monitoring indicators | Source(s) of Information |
|-------------------|---|---|
| | Progress against Southern Water Reporting Criteria ¹⁰ e.g. Water quality compliance; Water supply interruptions; Leakage; Water supply resilience; Mains repairs; Unplanned outage Risk of severe restrictions in a drought; Treatment works compliance; River water quality; Delivery of water industry national environment programme requirements; Maintain bathing waters as excellent; Improve the number of bathing waters to at least Good; Improve the bathing waters at Excellent quality | SWS |
| Climate factors | Net greenhouse gas emissions per MI (million litres) of treated water (kg CO ₂ equivalent emissions per MI) reported annually by Southern Water Progress against Southern Water Reporting Criteria ¹¹ e.g. Renewable generation | SWS |
| Transport | Transport fleet fuel consumption, emissions and mileage, as monitored routinely by Southern Water | SWS |
| Community amenity | Scheme level community disruption due to construction works / during operation (where applicable) would be monitored through an Environmental Management Plan agreed as part of the planning permission process | SWS |
| | Complaints logged with Southern Water and Local Authority Environmental Health Officers or equivalent | SWS/Local Authority Environmental Health Officers |
| | Responses gauged through customer satisfaction surveys and reported in Southern Water's annual performance processes Progress against Southern Water Reporting Criteria ¹² e.g. Customer satisfaction (C-MeX & D-MeX) | SWS |
| Air quality | Scheme-specific monitoring during construction works / during operation (where applicable) would be monitored through an Environmental Management Plan agreed as part of the planning permission process | SWS/Local planning Authorities |
| | Changes in air quality as monitored by the Defra Automatic Urban and Rural Network, including using this data to establish the baseline conditions | Defra |

¹⁰ https://www.southernwater.co.uk/media/4902/reporting_criteria_2020_21.pdf

¹¹ https://www.southernwater.co.uk/media/4902/reporting_criteria_2020_21.pdf

¹² https://www.southernwater.co.uk/media/4902/reporting_criteria_2020_21.pdf

| Impacted receptor | Monitoring indicators | Source(s) of Information |
|------------------------------|---|---|
| Landscape and visual amenity | Baseline, construction phase and operational phase Landscape and Visual Impact Assessments or equivalent assessment techniques of sensitive landscapes and visual amenity identified in the SEA (and subsequent planning application submissions) as being at a major or moderate adverse effect. Assessments to be carried out in consultation with appropriate bodies, such as the National Park Planning Authorities, relevant AONB committees and Natural England. These surveys will aid planning and evaluation of the success of proposed mitigation measures to reduce adverse effects on landscape and visual amenity. | SWS/National Park Authorities/AONB Management Bodies/ Natural England |
| Cultural heritage | Condition of buried archaeology would be monitored during construction works as part of a watching brief and associate response measures as set out in the Environmental Management Plan agreed as part of the planning permission process | SWS |
| | Consultation with Historic England, heritage asset owners and other relevant stakeholders to ensure adverse impacts are minimised and opportunities sought for heritage discovery and/or maintenance. | Historic England |
| | Reference to Historic England’s monitoring of heritage assets such as Listed Buildings and Scheduled Monuments, Registered Battlefields, Registered Parks and Gardens, in particular the ‘Heritage at risk’ register. | Historic England |

Section 9 of the Environmental Report provides further information in relation to the proposed measures for monitoring the effects of the draft WRMP24.

Quality Assurance

The Government’s Guidance on SEA¹³ contains a quality assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in **Appendix A**, demonstrating how this Environmental Report meets these requirements.

Next Steps

This Environmental Report is being issued for consultation to the SEA consultation bodies (the Environment Agency, Historic England and Natural England) and provided as part of the evidence base to support the consultation on the draft WRMP24. The consultation will run from **XXX, 2022 – YYY 2023**.

¹³ Office of the Deputy Prime Minister (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*.

Following consultation, completion of the Statement of Response and Government direction, SWS will publish the final WRMP24. In conjunction with publishing the Final WRMP24, SWS will also issue a Post Adoption Statement. This will set out the results of the consultation and SEA processes and the extent to which the findings of the SEA have been accommodated in the Final WRMP24.

Once the final WRMP24 has been published later in 2023, the preferred options for managing water supply and demand contained in it will need to be implemented through specific projects. As part of this process, each project may be subject to further assessment to understand and manage its potential environmental and social impacts. These assessments, which may include HRA and EIA, will take account of the issues discussed in this Environmental Report but will also be informed by the greater detail available as the work progresses about construction techniques, building materials, agreed locations and routes.

1. Introduction

1.1. Background and Purpose of Report

This Strategic Environmental Assessment (SEA) Environmental Report has been prepared in support of the development of the Southern Water Services (SWS) Water Resources management Plan (WRMP24). A Habitats Regulations Assessment (HRA) and a Water Framework Directive (WFD) assessment have also been carried out in parallel.

SEA is a statutory requirement for plans or programmes which could have significant environmental implications and helps to identify where there are potential impacts and how any negative impacts might be mitigated. More information about SEA, and its role in supporting the development of the WRMP24 is provided in **Section 1.2**.

This Environmental Report presents the findings of the SEA of SWS draft WRMP24. The purposes of the report are

- to ensure that the likely significant environmental and socio-economic effects of the draft WRMP24 and any reasonable alternatives are identified, characterised and assessed;
- to help identify appropriate measures to avoid, reduce or mitigate adverse effects and to enhance beneficial effects associated with the implementation of the draft WRMP24 wherever possible;
- to provide a framework for monitoring the potential significant effects arising from the implementation of the draft WRMP24;
- to give the statutory consultees, stakeholders and the wider public the opportunity to review and comment upon the environmental effects that the draft WRMP24 may have on them, their communities and their interests, and to encourage and support them to make responses and suggest improvements to the draft WRMP24;
- to inform SWS's decisions on the draft WRMP24; and
- to demonstrate that the draft WRMP24 has been developed in a manner consistent with the requirements of the SEA Regulations.

This Environmental Report presents the review of relevant policies and plans (Section 2) and the baseline environment information (Section 3) that set the context for the assessment that has been carried out in accordance with the assessment methodology (Section 4). The potential effects of alternative WRMP24 measures are described in Sections 5 and 6, with assessment of the cumulative, or in-combination, effects between WRMP24 measures and other activities, programmes and plans set out in Section 7. Information regarding mitigation and monitoring is provided in Section 8 and 9 respectively. A quality assurance checklist is provided in **Appendix A**.

1.2. Application of SEA to the WRMP24

1.2.1. Overview of Strategic Environmental Assessment

SEA became a statutory requirement in the UK following the adoption of Directive 2001/42/EC (the SEA Directive) on the assessment of effects of certain plans and programmes on the environment. The Directive was transposed into national legislation by The Environmental Assessment of Plans and Programmes Regulations 2004 (referred to as the SEA Regulations)¹⁴.

¹⁴ The Environmental Assessment of Plans and Programmes Regulations 2004 (Statutory Instrument 2004 No. 1633) apply to any plan or programme which relates solely or in part to England.

SEA is a systematic decision support process, aiming to ensure that the likely significant environmental effects of plans and programmes are identified, described and assessed to avoid, manage or mitigate any significant adverse effects and to enhance any beneficial effects. In this context, the purpose of SEA is to encourage relevant plan authors to integrate environmental considerations into the development of any plan or programme. Generally, a SEA is therefore conducted before an Environmental Impact Assessment (EIA) is undertaken.

1.2.2. Requirement for SEA of Southern Water's WRMP24

The SEA Regulation 5 requires “an environmental assessment ... of certain plans and programmes which are likely to have significant effects on the environment”. Plans and programmes are defined as those:

“which are subject to preparation and/or adoption by an authority at national, regional or local level or which are prepared by an authority for adoption, through a legislative procedure by Parliament or Government; and

which are required by legislative, regulatory or administrative provisions” (Regulation 2 (1)).

Guidance produced by the European Commission (EC)¹⁵ indicates that in preparing plans for ensuring water resources, privatised utilities companies can be considered an authority because they are providing services that would be carried out by public authorities in a non-privatised regime. The preparation of a WRMP is a statutory requirement and therefore meets the requirements of Regulation 2.

Plans and programmes that may have significant effects on the environment are identified as those:

“which are prepared for... water management... and which set the framework for future development consent of projects listed in Annexes I and II to Directive 85/337/EEC [the Environmental Impact Assessment Directive]; or

which, in view of the likely effect on sites, have been determined to require an assessment pursuant to Article 6 or 7 of Directive 92/43/EEC [the Habitats Directive]” (Regulation 5 (2)).

Broadly, this includes plans that may include development of infrastructure to source, store, transfer or manage water, or may affect sites that have European designations (Special Areas of Conservation (SACs), Special Protection Areas (SPAs), and Ramsar sites).

Government¹⁶, regulator¹⁷ and industry¹⁸ guidance indicates that there is a requirement for water companies, as responsible authorities, to determine if their WRMPs fall within the scope of the SEA Regulations and whether a SEA must be undertaken.

¹⁵ EC (2003) *Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment*. Available online: http://ec.europa.eu/environment/archives/eia/pdf/030923_sea_guidance.pdf

¹⁶ Office of the Deputy Prime Minister (ODPM), Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland (2005) *A Practical Guide to the SEA Directive and European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 sites*

¹⁷ UK Government (2022) *Water Resource Planning Guideline* [online]. Available at: <https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline>. [Accessed 05.01.22].

¹⁸ UKWIR (2021) *Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans*. Report Ref. No. 21/WR/02/15

1.2.3. Applying SEA to Water Resource Management Plans

SWS's WRMP24 is subject to SEA. SEA is required based on the scope of the potential effects that could arise, particularly given the number and area covered by European designated conservation sites in the operational area covered by the WRMP. In this context, the purpose of the SEA of the draft WRMP24 will be to:

- identify the potentially significant environmental effects of the draft plan in terms of the water resource management options being considered;
- help identify appropriate measures to avoid, reduce or manage adverse effects and to enhance beneficial effects associated with the implementation of the draft plan wherever possible;
- give the statutory SEA bodies, stakeholders and the wider public the ability to see and comment upon the effects that the draft plan may have on them, and encourage them to make responses and suggest improvements to the draft plans; and
- inform the selection of water resource management options to be taken forward into the final versions of the WRMP24.

In summary, the SEA identifies, describes and assesses the likely significant effects arising from the following aspects of the WRMP24:

- the constrained water resource options;
- the preferred water resources options;
- the preferred programme of options selected to comprise the preferred plan to address the supply demand deficit;
- any alternative plans proposed to address the supply demand deficit;
- any cumulative, secondary and/or synergistic effects of implementing the plans.

Where relevant, any assessment work that has already been completed e.g., as part of the RAPID¹⁹ gated submission process for the SROs, this will be used to inform the assessments of the options as they are presented.

1.3. Southern Water Supply Area and the WRMP24

1.3.1. Southern Water's Supply Area

SWS provides water supplies to just over 2.4 million customers across an area of 4,450km², extending from East Kent, through parts of Sussex, to Hampshire and the Isle of Wight in the west.

Water supplies are predominantly reliant on the transmission and storage of groundwater from the widespread chalk aquifer that underlies much of the region. This extends throughout parts of Kent, Sussex, Hampshire and the Isle of Wight; and makes up 70% of the total water supply. River abstractions account for 23% of the water supplies, most notably the Eastern Yar and Medina on the Isle of Wight, the Rivers Test and Itchen in Hampshire, the Western Rother and Arun in West Sussex, the River Eastern Rother and River Brede in East Sussex, and the River Teise, River Medway and Great Stour in Kent. Four surface water impounding reservoirs provide the remaining 7% of water supplies: Bewl Water, Darwell, Powdermill and Weir Wood. The total storage capacity of these four

¹⁹ Regulators Alliance for Progressing Infrastructure Development (RAPID) was established in 2019 to "help accelerate the development of new water infrastructure and design future regulatory frameworks. The joint team is made up of the 3 water regulators Ofwat, Environment Agency and Drinking Water Inspectorate". Available online <https://www.ofwat.gov.uk/regulated-companies/rapid/3/>

reservoirs amounts to 42,390MI. South East Water is entitled to 25% of the available supplies from the River Medway Scheme, which incorporates Bewl Water Reservoir.

Although the South East is one of the driest regions in the UK, rainfall is still integral to the maintenance of water supplies. During winter, when most of the effective rainfall occurs, groundwater reserves are recharged naturally through infiltration processes. Rain infiltrates through the soil to recharge the natural storage in the underlying groundwater to support river baseflows for the following year. Annual rainfall averages 730mm across the SWS region. Rainfall experienced outside of winter is of less value to groundwater recharge as it is mostly lost to evaporation, plant transpiration or runs off directly into rivers from the land.

The SWS region is divided into fourteen Water Resource Zones (WRZs) which are geographically separate and amalgamated into three larger, sub-regional areas (see **Figure 1-1**):

Western Area – comprising the following seven WRZs:

- Hants Near Basingstoke (HKZ)
- Hants Andover (HAZ)
- Isle of Wight (IOW)
- Hants Rural (HRZ)
- Hants Winchester (HWZ)
- Hants Southampton East (HSE)
- Hants Southampton West (HSW)

Central Area – comprising the following three WRZs:

- Sussex North (SNZ)
- Sussex Worthing (SWZ)
- Sussex Brighton (SBZ)

Eastern Area – comprising the following four WRZs:

- Kent Medway East (KME)
- Kent Medway West (KMW)
- Kent Thanet (KTZ)
- Sussex Hastings (SHZ)

A number of bulk water supplies are made between SWS and several adjacent water companies. SWS's supply area is bounded by eight other water companies:

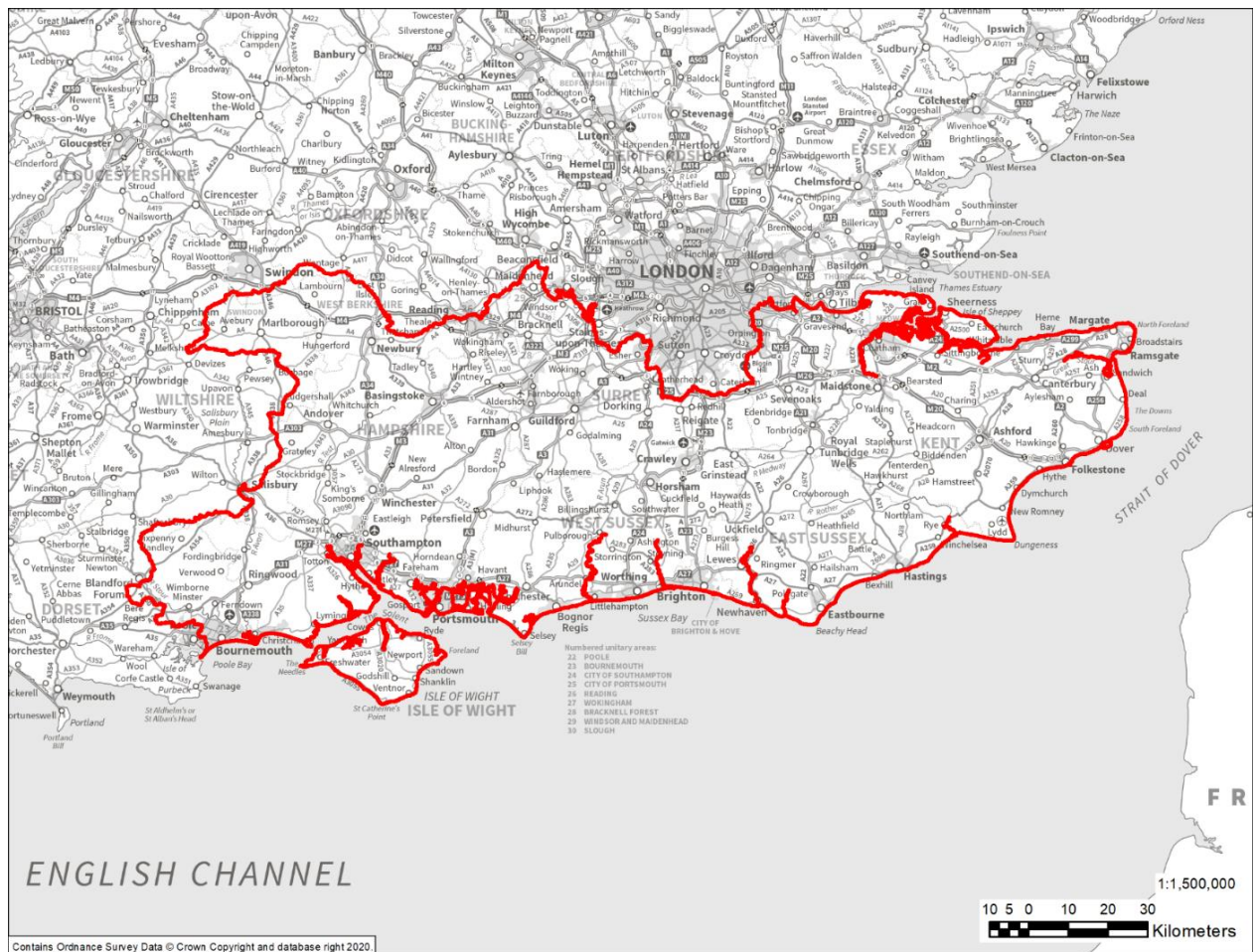
- Thames Water
- Wessex Water
- Cholderton and District Water
- South East Water
- Affinity Water
- SES Water
- Bournemouth Water
- Portsmouth Water

The geographical area under consideration for the SEA covers all of SWS's WRZs as well as the river and/or groundwater catchments of those water sources and sources of bulk water supply imports that serve these WRZs but which lie outside their boundaries (see map at **Figure 1-2**).

Figure 1-1 SWS's Supply Area



Figure 1-2 SEA Area under Consideration



1.4. Southern Water’s WRMP Process

1.4.1. Overview

Water resources management planning is undertaken by all water companies in England and Wales in order to ensure reliable, resilient water supplies over the long-term planning horizon. The process includes working out and forecasting how much water customers will need over the planning period (assessing demand) and how best to provide it (assessing options to reduce or constrain demand growth and/or augment reliable supplies of water) in an efficient, timely manner (programme appraisal). Companies identify the preferred, ‘best value’ programme of demand management and water supply options to develop an overall strategy to maintain a balance between reliable supply and demand in each WRZ and for their supply area as whole (the WRMP). Water companies in England and Wales have a statutory requirement to prepare a WRMP every five years. Each water company’s WRMP sets out how the balance between water supply and demand, and security of supply, will be maintained over a minimum of 25 years in a way that is economically, socially and environmentally sustainable. This will include public water supply (PWS) and non-public water supply (non-PWS).

1.4.2. WRMP24 Objectives

The over-arching ‘best value’ planning objectives to meet statutory and policy requirements are:

- Deliver a secure and wholesome supply of water
- Deliver environmental and social benefit
- Increase the resilience of water systems
- Deliver at a cost that is acceptable to customers

Table 1.1 sets out these objectives and the associated criteria and metrics for the delivery of the WRMP²⁰.

Table 1.1 WRMP Objectives, Criteria and Metrics

| Best value objective | Criteria | Metric |
|---|--|--|
| Deliver a secure and wholesome supply of water to customers and other sectors to 2075 | Meet the supply demand balance | Public water supply – supply demand balance profile (M/d) Provides additional water needed by other sectors (M/d) |
| | Leakage | 50% reduction in leakage by each company by 2050 from 2017–18 baseline (%) % leakage reduction above 50% |
| | Water into supply | Distribution input (DI) per property (litres per day) |
| | Customer preference | Customer preference for option type (score) |
| Deliver environmental improvement and social benefit | Strategic Environmental Assessment (SEA) | Programme benefit (score max) Programme disbenefit (score min) |
| | Natural capital | Enhancement of natural capital value (£m) |
| | Abstraction reduction | Reduction in the volume of water abstracted at identified sites (M/d) and by when (date) |
| | Biodiversity | Net gain score (%) |

²⁰ Draft Water Resources Management Plan 2024: Technical Report, October 2022, Version 0.1

| Best value objective | Criteria | Metric |
|---|------------------------------------|---|
| | Carbon | Cost of carbon offsetting (£m) |
| Increase the resilience of the region's water systems | Drought resilience | Achieve 1:500-year drought resilience (date achieved) |
| | Resilience assessment reliability | Programme reliability score |
| | Resilience assessment adaptability | Programme adaptability score |
| | Resilience assessment evolvability | Programme evolvability score |
| Deliverable at a cost that is acceptable to customer | Programme cost | Net present value (£m) using the social time preference rate (STPR) |
| | Inter-generational equity | Net present value (£m) using the long-term discount rate (LTDR) |

1.4.3. WRMP24 development

National guidance²¹ requires alignment of water company WRMPs with the regional plan. In consequence, SWS has worked with Water Resources South East (WRSE), a collaboration of the six²² water companies that supply water in south east England, to develop and apply a consistent framework for water resource plan development, with work split between the regional and company level. This included the following stages:

1. Prepare supply-demand balance information
2. Develop a list of options that considers government policy and aspirations
3. Undertake problem characterisation and evaluate strategic needs and complexity
4. Decide on a modelling method
5. Identify and define data inputs to model(s)
6. Undertake decision-making (options appraisal) modelling
7. Carry out sensitivity tests
8. Produce a final planning forecast.

Steps 1-3 have primarily been undertaken by member water companies individually. WRSE has progressed steps 4-8 after agreeing on an approach with members and consulting on the overall method with other stakeholders.

In line with the steps identified, SWS has developed a supply-demand balance to identify those water resource zones²³ (WRZs) in deficit over the lifetime of the plan (and so where additional water resources are required). The WRMP presents options for the resolution of the WRZ deficit. Option selection for the draft WRMP entails the following steps:

- Identification of an **unconstrained list** of options.
- Screening and filtering of the list against initial screening criteria to develop a **feasible list**. Options that are impractical or have unacceptable environmental or economic impacts are removed.

²¹ UK Government (2022) *Water Resource Planning Guideline* [online]. Available at: <https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline>.

²² Affinity Water, Portsmouth Water, SES Water, South East Water, Southern Water and Thames Water

²³ UK Government (2022) *Water Resource Planning Guideline* [online]. Available at: <https://www.gov.uk/government/publications/waterresources-planning-guideline/water-resources-planning-guideline>

Section 4.4. of the WRPG defines a water resource zone as “an area within which the sources of water and distribution of water to meet demand, is largely self-contained (with the exception of agreed bulk transfers)”.

- Screening against final screening criteria to arrive at a **constrained list**. Constrained options are taken forward into the decision-making modelling process.
- **Environmental assessment** of the options as part of the Strategic Environmental Assessment (SEA), Habitats Regulations Assessment (HRA) and WFD assessment processes.

Each unconstrained option has been assessed against the following screening criteria to remove options that are impractical or have unacceptable environmental or economic impacts:

- Will the option deliver beneficial environmental outcomes, whether on its own or in combination? Does it provide additional benefits such as improved water quality, reduced flood risk or improved catchment management, over and above the objective of improving water resources? Can it contribute to environmental sustainability?
- Would the option provide enhanced resilience through broadening types or locations of water resources available for supply? This could include links to areas or sources that may respond differently to certain drought conditions or a resource that is not weather dependent (e.g. desalination or water reuse).
- Can the option be delivered in a phased or modular way? This increases the flexibility of the option in response to future changes in the forecast supply-demand balance.
- Is the option likely to be technically feasible? For example, the location of aquifer storage and recovery (ASR) options would be limited to locations with suitable geology.
- Does the option help address our water resources planning problem, or could it be used to provide a regional benefit? Can it provide water or water saving in the WRZ, or can it provide a direct or conjunctive use water resource benefit with a neighbouring water company.
- Is the option likely to meet both customer and regulator expectations? If an option is likely to meet public resistance or may contravene environmental and planning restrictions, government policy or impact upon WFD non-deterioration objectives, then it may need to be omitted or given a longer timeline for implementation.
- What is the indicative cost and capacity of the option and when is it likely to become available? If an option is disproportionately expensive or its capacity is too small to be suitable/practicable to meet the projected supply-demand deficit or part of it then it may not be considered viable. Similarly, an option is also assessed in terms of the time required to develop and achieve benefit from it. If an option cannot be developed in time, then we would look for alternatives that can.
- Is the option likely to be particularly risky to implement, or the output highly uncertain? This considers aspects like land availability, deliverability of the option in terms of achieving the estimated output, the availability and reliability of the required technology and experience within the company in developing and operating similarly options. It also looks at confidence in the lead-in time required to develop the option, the likely spend profile and the nature and amount of environmental and engineering work required at each stage from planning to delivery.

Options that progressed to the feasible list were subject to a further screening process to produce a constrained options list, which included consideration of the water resource problem faced in each WRZ, and the flexibility of options for investment modelling. For example:

- Are there are sufficient options in each WRZ?
- Is there sufficient connectivity?
- Do the options contain enough granularity (i.e. different sizes of options)?
- Is there a need for modular options?
- Is the granularity of those modular options sufficient?

All of the options on the constrained options list are considered to be viable and potentially deliverable and are, therefore, made available for selection in the investment modelling process. The options selected by the investment model, under various planning scenarios in each WRZ, form the list of 'preferred options' in the WRMP option and has been assessed against the following criteria:

- **Environmental and social assessment** – SEA and HRA have been produced which summarise the environmental and social costs and benefits and impacts upon European designated sites of each option. The SEA screening criterion illustrates:
 - the risk of adverse effects and, where available, mitigation measures; and
 - the opportunity for beneficial effects (e.g. improved water quality, reduced flood risk, improved catchment management) resulting from the option.
- **Links to other options** – in terms of mutual exclusivities and dependencies
- **Risks** – including vulnerability of the option to future uncertainty relating to climate change impacts, regulatory changes, sustainability and acceptability of the option, potential planning constraints and risks and changes in customer behaviour (for some demand management options).
- **Phasing** – whether the option can be constructed in a phased or modular way, which would increase its flexibility to future changes in the forecast supply-demand balance
- **Resilience** – an indication of the confidence that the option will ‘deliver’ the required supply-demand balance benefit.

Types of water resource management options considered to meet any forecast deficit in a WRZ can include:

- **Customer options** which include measures to manage the demand for water such as smart meters, rainwater harvesting, greywater recycling or household visits to install water efficiency measures;
- **Distribution options** which include measures to optimise the efficiency of water networks, reduce leakage and minimise any unscheduled resource losses;
- **Production options** include measures to increase the efficiency and effectiveness of treatment processes;
- **Resource management options** which include measures to increase supply such as greater peak output at existing groundwater sources, reservoir or surface water supply and which will include SROs; this also includes catchment management options, for example nature-based solutions;
- **Non-PWS options** which include any options which increase water resource availability or reduce the need for abstraction outside of that needed for public water supplies.

The preferred plan options that collectively comprise the proposed plan programme. In developing the preferred programme, consideration is given to alternative plan programmes (or pathways) developed in response to different scenarios, to resolve any supply deficits in relation to financial, environmental and social costing and, potentially, to facilitate water trading between companies.

SWS has identified the following WRZ as being in deficit in deficit over the lifetime of the plan:

Western Area – comprising the following seven WRZs:

- Hants Near Basingstoke (HKZ)
- Hants Andover (HAZ)
- Isle of Wight (IOW)
- Hants Rural (HRZ)
- Hants Winchester (HWZ)
- Hants Southampton East (HSE)
- Hants Southampton West (HSW)

Central Area – comprising the following three WRZs:

- Sussex North (SNZ)
- Sussex Worthing (SWZ)
- Sussex Brighton (SBZ)

Eastern Area – comprising the following four WRZs:

- Kent Medway East (KME)
- Kent Medway West (KMW)
- Kent Thanet (KTZ)
- Sussex Hastings (SHZ)

SWS has identified some 300 constrained options and following evaluation, 122 preferred supply options and seven demand management options have been selected for inclusion in the best value draft WRMP24. These are summarised in the strategies for each area (and listed in **Appendix E**).

Western Area strategy

- Reducing consumption by household customers in order to reduce average per capita consumption to less than 110 litres per person per day across the company by 2050
- Leakage reduction: reduce leakage so as to achieve a minimum 50% reduction in leakage across the company by 2050
- Catchment First: implementing a catchment solution to improve environmental resilience
- Hampshire Water Transfer and Water Recycling Project (a Strategic Resource Option)
- Recycling water at Sandown Water Treatment Works
- Recycling water at Woolston Water Treatment Works
- River Test Managed Aquifer Recharge
- Newbury groundwater option
- Romsey groundwater option
- Newchurch groundwater option
- Bulk imports – both continuation of existing imports and new transfers from Portsmouth Water and Thames Water
- Drought Interventions (Temporary Use Bans and Non-Essential Use Bans) and Test Drought Permit/Order

Central Area strategy

- Reducing consumption by household customers in order to reduce average per capita consumption to less than 110 litres per person per day across the company by 2050
- Leakage reduction: reduce leakage so as to achieve a minimum 50% reduction in leakage across the company by 2050
- Recycling at Littlehampton Water Treatment Works
- Recycling at Horsham Water Treatment Works
- Desalination on the Sussex Coast
- River Adur Offline Reservoir
- Pulborough groundwater option
- Western Rother licence change and water storage
- Bulk transfers – both continuation of existing import and new transfer from Portsmouth Water, SES Water and South East Water
- Drought Interventions (Temporary Use Bans and Non-Essential Use Bans) and Pulborough, North Arundel and East Worthing Drought Permit/Orders

Eastern Area strategy

- Reducing consumption by household customers in order to reduce average per capita consumption to less than 110 litres per person per day across the company by 2050
- Leakage reduction: reduce leakage so as to achieve a minimum 50% reduction in leakage across the company by 2050
- Recycling at Medway Water Treatment Works
- Recycling at Hastings Water Treatment Works

- Desalination on the East Thanet Coast
- Desalination on the Thames Estuary
- Desalination on the Isle of Sheppey
- Recommissioning of Gravesend groundwater source
- Reconfiguration of Rye groundwater source
- Raising Bewl Reservoir
- Bulk transfers – both continuation of existing import and new transfer from Affinity Water and South East Water
- Drought Interventions (Temporary Use Bans and Non-Essential Use Bans) and River Medway Scheme and Sandwich Drought Permit/Orders

Once the final WRMP24 has been published later in 2023, the preferred options for managing water supply and demand contained in it will need to be implemented through specific projects. As part of this process, each project may be subject to further assessment to understand and manage its potential environmental and social impacts. These assessments, which may include HRA and EIA, will take account of the issues discussed in this Environmental Report but will also be informed by the greater detail available as the work progresses about construction techniques, building materials, agreed locations and routes.

1.5. Stages of Strategic Environmental Assessment

SEA comprises five key stages:

- **Stage A:** Scoping;
- **Stage B:** Develop and Refine Alternatives and Assess Effects;
- **Stage C:** Prepare Environmental Report;
- **Stage D:** Consult on the Draft Plan and Environmental Report and Prepare the Post Adoption (SEA) Statement; and
- **Stage E:** Monitor Environmental Effects.

Stage A of the SEA of the WRMP24 has been summarised in the scoping technical note. The scoping stage itself comprises five tasks that are listed below:

- i. Review of other relevant policies, plans, programmes and strategies (hereafter referred to as 'plans and programmes').
- ii. Collation and analysis of baseline information.
- iii. Identification of key sustainability issues.
- iv. Development of the assessment framework.
- v. Consultation on the scope of the SEA (this Scoping Report).

The scoping technical note set out the approach to assessing the likely significant environmental effects of the draft WRMP24. It was issued for scoping consultation for 5 weeks from 21st February to 27th March 2022. The representations received and how they have been taken into account are presented in **Appendix B**.

The effects (including cumulative effects) of the water resource options contained in the draft WRMP24 and any reasonable alternatives have then been assessed (**Stage B**).

These assessments are presented in this Environmental Report (in a form to meet the requirements of Schedule 2 of the SEA Regulations) which has been completed to accompany the draft WRMP24 (**Stage C**).

The draft WRMP24 and accompanying documents including the Environmental Report will then be submitted to the Secretary of State for Environment, Food and Rural Affairs, for a request for publication and once directed to do so, SWS will publish the documents for consultation (**Stage D**). Following consultation, and within 26 weeks of consultation beginning, SWS will need to prepare a Statement of Response to the representations received. The revised draft WRMP24 will be sent to the Government, and if changes are likely to be significant, is likely to be subject to further assessment and consultation. Following direction from the Government, the final WRMP24 will be published and implemented accordingly (anticipated August 2023). In conjunction with publishing the final WRMP24, a Post Adoption Statement will also be issued (to meet the requirements of SEA regulation 16 (4)). This will set out the results of the consultation and SEA processes and the extent to which the findings of the SEA have been accommodated in the final plan.

The SEA requires monitoring of any resulting environmental effects of the WRMP24 (**Stage E**).

1.5.1. WRSE Environmental Assessment

SWS is developing its WRMP24 within the context of the WRSE Emerging Regional Plan²⁴. The interactions and the need for consistency between the regional plans and the WRMPs, and between regions has driven development of new approaches and methodologies in the preparation of water resources plans. In this regard, WRSE commissioned the development of a new integrated environmental appraisal process to provide a consistent framework for environmental assessments for WRMP24. The method²⁵ has been developed taking into account the guidance from the EA and uses an integrated approach covering SEA, HRA, WFD assessment, Natural Capital Assessment (NCA) and Biodiversity Net Gain (BNG). It was subject to consultation in 2020 and has been revised²⁶.

The revised environmental assessment methodology provides the approach to assessment for water companies when undertaking their WRMP24 regulatory environmental assessments. In consequence, a large amount of the supporting information required for SWS draft WRMP24 SEA has been produced as part of the regional plan environmental assessments.

Paragraph 1.36 of the revised method outlines specific actions to be undertaken by individual water companies when undertaking the assessments:

- “Collection, analysis and presentation of locally relevant plans and programmes to supplement the WRSE plans and programmes database.
- Collection, analysis and presentation of local baseline information to supplement the environmental datasets defined under the SEA topics.
- Identification, development and/or selection of local relevant assessment sub-objectives to provide a tailored assessment.
- Completion of an SEA for WRMP24.”

In applying SEA to the SWS draft WRMP24, implementation has:

- used the WRSE Regional Plan SEA Scoping Report²⁷ and consultation responses received as the basis of the proposed approach to assessment (including the relevant contextual information, the 14 assessment objectives and the assessment scoring criteria). Consistent with paragraph 1.36 of the WRSE Method Statement, where relevant, the contextual

²⁴ WRSE (2022) Futureproofing our water supplies: A Consultation On Our Emerging Regional Plan For South East England. Available at: <https://wrse.uk.engagementhq.com/the-proposed-solution>.

²⁵ WRSE (2020) WRSE Method Statement: Environmental Assessment Consultation version July 2020. Available at: [wrse_file_1329_wrse-ms-environmental-assessment.pdf](https://www.wrse.org.uk/media/1329/wrse-ms-environmental-assessment.pdf)

²⁶ WRSE (2021), Method Statement: Environmental Assessment Post-consultation version, November 2021. Available at: [methodstatement-environmental-assessment-nov-2021.pdf](https://www.wrse.org.uk/media/51vdwyw0/wrse-regional-plan-strategic-environmental-assessment-scoping-report.pdf) (wrse.org.uk)

²⁷ <https://www.wrse.org.uk/media/51vdwyw0/wrse-regional-plan-strategic-environmental-assessment-scoping-report.pdf>

information (including the review of plans and programmes and baseline information) has been revised to supplement the information already collated and presented. No changes have been made to the approach to assessment to avoid any resultant inconsistencies between WRMP24 assessment and the WRSE Regional Plan assessment.

- used the WRSE SEA assessment methodology to complete:
 - ▶ an assessment of the likely significant effects of the preferred options for each of SWS WRZs in deficit;
 - ▶ an assessment of the effects of the preferred programme of options and any identified alternative plan pathways;
 - ▶ an assessment of the cumulative effects with other infrastructure proposals or plans will be considered and assessed including, in particular, other water company WRMPs, the Regional Plan and SROs.
- presents the findings of the environmental assessment in an Environmental Report, consistent with the requirements of Schedule 2 of the SEA Regulations. This will be issued as part of the public consultation on the draft WRMP24.

1.6. Structure of the Environmental Report

This SEA Environmental Report presents the findings of the assessment of the constrained, preferred options and programme of options that comprise the cost efficient WRMP24. It provides the public, stakeholders and regulatory bodies with an opportunity to express their opinions on the findings of the assessment. The Environmental Report is structured as follows:

- Section 1 (this section): describes the requirement for, purpose and process of the SEA, and its context in relation to the WRMP24.
- Section 2 - Policy Context: identifies key messages and environmental protection objectives from other relevant plans and programmes.
- Section 3 - Environmental Baseline Review: draws out the key environmental issues SWS intends to consider in the SEA. Identifies the current and future baseline conditions within the area of potential influence of the WRMP24.
- Section 4 – Methodology: provides details of the methods employed in undertaking the assessment including the cumulative effects assessment methodology.
- Section 5 – Assessment of WRMP24 Options: presents the potential impacts of the various WRMP24 options against the SEA framework.
- Section 6 – Summary of Likely Significant Effects: summarises the likely significant effects for the WRZs, the water transfer schemes and the catchment management options.
- Section 7 – Cumulative Effects Assessment: discusses the potential in-combination impacts of WRMP24 scheme options and other plans and projects in the region.
- Section 8 - – Mitigation: discusses measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the WRMP24.
- Section 9 – Next Steps and Proposals for Monitoring: outlines the next steps in the development of the WRMP24 and its assessment and outlines monitoring measures to track the environmental effects to show whether they are as predicted, to help identify any adverse impacts and trigger deployment of mitigation measures.

- Quality Assurance: provides a checklist of requirements from the ODPM guidance (**Appendix A**)

1.7. Consultation

1.7.1. Consultation on the Scoping Report

Consultation bodies, stakeholders and the public were invited to express their views on the scope of the SEA in accordance with SEA Regulation 12(5). The scoping information was issued on 2nd February 2022 to the Environment Agency, Historic England and Natural England. The responses to comments provided on the updated scoping information and how these have been taken into account in carrying out the SEA are presented in **Appendix B**.

1.7.2. Consultation on the Environmental Report

In June 2022 SWS submitted an early draft WRMP24 submission to Defra as required by the WRMP Direction 2022. This was accompanied by an Environmental Report. This enabled SWS to take on board some early feedback which has influenced the development of the plan and accompanying assessments. This included provided more detail on demand management and supply-side delivery schemes. Specific comments were received from the Environment Agency on the draft Environmental Report (June 2022) are set out in **Appendix C**, along with information on how these have been addressed in this revised Environmental Report.

This Environmental Report was produced taking into consideration the responses received from consultation bodies during scoping and early engagement on the June draft WRMP24 submission. It provided assessments of the potential effects (adverse and beneficial) of the options considered for the WRMP24 and set out how the findings were used to inform the development of the draft plan.

This Environmental Report is being issued for consultation to the SEA consultation bodies (the Environment Agency, Historic England and Natural England), the public and other interested stakeholders and provided as part of the evidence base to support the consultation on the draft WRMP24. The consultation will run from XXX, 2022 – YYY 2023. They are invited to express their views on this Environmental Report, as part of the public consultation on SWS's WRMP24.

2. Policy Context

2.1. Introduction

The SEA Regulations require a report containing “an outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes” (Schedule 2(1)) as well as “The environmental protection objectives, established at international (European) 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” (Schedule 2(5)).

In accordance with the regulation, a review of relevant plans and programmes is presented in Section 2. A summary of key messages is presented in Table 2-1 (with the full review presented in **Appendix C**).

2.2. Review of Policies, Plans and Programmes

2.2.1. Policies, Plans and Programmes reviewed

One of the first steps in undertaking SEA is to identify other relevant policies, plans, programmes and environmental protection objectives. The review of these other plans sets out to establish how SWS’s WRMP24 might be affected by other plans, to identify other environmental and social objectives which the WRMP24 should consider and to help to identify the assessment objectives for the SEA.

Through updated work completed for WRSE environmental assessment, potentially relevant plans and programmes were identified at the international, national, regional and local level. If the plan or programme was assessed as not having a significant effect on the objectives of the WRMP24 and/or the WRMP24 does not have a significant effect on achieving the objectives of the other plan or programme, it was not reviewed in detail.

The full list of international, national, regional and local policies, plans, programmes and strategies reviewed and the key policy objectives, targets and how they relate to SEA topics and SEA objectives are provided in **Appendix C** and listed in **Table 2-1**.

Table 2-1 Key policy objectives derived from the review of plans, policies and programmes

| International/European | |
|---|--|
| <ul style="list-style-type: none"> • Ramsar Convention - The Convention on Wetlands of International Importance (1971) • UNESCO (1972) Convention Concerning the Protection of the World Cultural and Natural Heritage • Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) • Directive on the Conservation of Wild Birds (79/409/EEC) (as amended) • Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983) • The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1985) | <ul style="list-style-type: none"> • European Commission Environmental Liability Directive (2004/35/EC) • Thematic Strategy on Air Pollution (2005) • 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) • Fresh Water Fish Directive (2006/44/EC) • Groundwater Directive (2006/118/EC) • The European Landscape Convention (2006) • Thematic Strategy for Soil Protection (2006) • Directive on the Assessment and Management of Flood Risks (2007/60/EC) |

- Charter for the Protection and Management of Archaeological Heritage (1990)
- The Nitrates Directive (91/676/EEC)
- Urban Wastewater Treatment Directive (91/271/EEC)
- Convention on Biological Diversity (1992)
- Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC)
- European Commission (1992) The Habitats Directive 1992/43/EEC
- The European Convention on the Protection of Archaeological Heritage (Valletta Convention) (1992)
- Kyoto Protocol to the UN Framework Convention on Climate Change (1997)
- Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)
- Drinking Water Directive (1998/83/EC)
- The Water Framework Directive (WFD) (2000/60/EC)
- The SEA Directive (Directive 2001/42/EC)
- Commitments arising from the World Summit on Sustainable Development, Johannesburg (2002)
- The Environmental Noise Directive (2002/49/EC)
- European Soils Charter (2003)
- Establishing measures for the recovery of the stock of European eel 2007 (1100/2007)
- Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond (2007)
- Ambient Air Quality Directive (2008/50/EC)
- Marine Strategy Framework Directive (2008/56/EEC)
- Promotion of the use of energy and renewable sources Directive (2009/28/EC)
- Defra (2011) Mainstreaming Sustainable Development
- European Commission (2011) The EU Biodiversity Strategy to 2020
- United Nations Framework Convention on Climate Change (UNFCCC) (2011) The Cancun Agreements
- Blueprint to Safeguard Europe's Water Resources (2012)
- Energy Act 2013
- Directive on Bathing Water (76/160/EEC); and Directive 2006/7/EC repealing Directive 76/160/EEC (from 2014)
- Paris Agreement (2015)
- A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy (2018)
- The Water Resources Planning Guideline (2021)

National

- National Parks and Access to the Countryside Act 1949
- Salmon and Freshwater Fisheries Act 1975
- The Ancient Monuments and Archaeological Areas Act 1979
- The Wildlife and Countryside Act 1981 (as amended)
- Environmental Protection Act 1990
- Planning (Listed Buildings and Conservation Areas) Act 1990
- Water Industry Act 1991
- Water Resources Act 1991
- Environment Act 1995
- Countryside and Rights of Way (CROW) Act 2000
- Water Act 2003 (as amended)
- Conservation 21 - Natural England's Conservation Strategy for the 21st Century, Natural England (2016)
- Managing Water Abstraction, Environment Agency (2013)
- Historic England (2015) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3
- National Infrastructure Delivery Plan 2016–2021, Infrastructure and Projects Authority (HM Government) (2016)
- Standing Advice on Protected Species, Natural England (2016)
- Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment, Historic Environment (2016)
- Water Resources Planning Framework (2015-2065), Water UK (2016)

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- Environmental Assessment of Plans and Programmes Regulations 2004
 - Securing the Future – Delivering the UK Sustainable Development Strategy (2005)
 - The Natural Environment and Rural Communities Act 2006 (NERC Act)
 - The Water Resources Management Plan Regulations 2007
 - Climate Change Act 2008
 - Climate Change and the Historic Environment, English Heritage (2008)
 - Planning Act 2008
 - Marine and Coastal Access Act (2009)
 - Safeguarding our Soils - A strategy for England, Defra (2009)
 - The Eels (England & Wales) Regulations 2009 (as amended)
 - Delivering a healthy natural environment. Ecosystem approach action plan, Defra (2010)
 - Flood and Water Management Act 2010
 - 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 Natural Choice: Securing the Value of Nature, Defra (2011)
 - Water for Life White Paper, Defra (2011)
 - UK Marine Policy Statement (2011)
 - National Policy Statement for Wastewater (2012)
 - UK Post-2010 Biodiversity Framework, Joint Nature Conservation Committee (JNCC) and Defra (2012)
 - Climate change approaches in water resources planning – Overview of new methods, Environment Agency (2013)
 - Ancient Woodland and Veteran Trees: Protecting them from development, Forestry Commission and Natural England (2014)
 - UK National Ecosystem Assessment Follow-on (2014)
 - Fixing the foundations: Creating a more prosperous nation, HM Government (2015)
 - The Environmental Damage (Prevention and Remediation) (England) Regulations 2015
 - The Great Britain Invasive Non-Native Species Strategy, Defra (2015)
 - Groundwater protection technical guidance, Environment Agency (2017)
 - Protect groundwater and prevent groundwater pollution, Environment Agency (2017)
 - The Conservation of Habitats and Species Regulations (2017) (as amended)
 - The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)
 - UK Climate Change Risk Assessment, Defra (2017)
 - A Green Future: Our 25 Year Plan to Improve the Environment, UK Government (2018)
 - Creating a better place: Our ambition to 2020, Environment Agency (2018)
 - Defra and The Environment Agency (2018) Resources and waste strategy for England
 - Draft National Policy Statement for Water Resources Infrastructure, Defra (2018)
 - Environment Agency and Natural Resources Wales (2018) Water Resources Planning Guideline: Interim update
 - HM Government (2018) The Water Supply (Water Quality) Regulations 2018
 - Preparing for a drier future: England's water infrastructure needs, National Infrastructure Commission (2018)
 - The Environment Agency's approach to groundwater protection, Environment Agency (2018)
 - The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, Defra (2018)
 - The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019)
 - The Invasive Alien Species (Enforcement and Permitting) Order 2019
 - Meeting our future water needs: a national framework for water resources, Environment Agency (2020)
 - National Flood and Coastal Erosion Risk Management Strategy for England, Environment Agency (2020)
 - State of Natural Capital Annual Report 2020, Natural Capital Committee (2020)
 - National Planning Policy Framework (NPPF) (2021)
 - Marine Plans – South East Inshore, South Inshore, South Offshore (to be published 2021)
 - The Environment Act 2021
 - Water Resources Planning Guideline and Technical Supplementary Guidance, Environment
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- A narrative for conserving freshwater and wetland habitats in England, Natural England (2016)

Agency, OfWAT and Natural Resources Wales (2022)

Regional/Local

- Chichester Harbour AONB Management Plan 2019-2024 (Chichester Harbour Conservancy)
- Chiltern Hills AONB Management Plan 2014-2019
- Cotswolds AONB Management Plan 2013-2018
- Cranborne Chase AONB Management Plan 2019-2024
- Dorset AONB - A Framework for the Future AONB Management Plan 2019 – 2024
- Drought Plans from adjacent water companies
- Environment Agency Catchment Abstraction Management Strategies (CAMS)
- Green infrastructure plans
- Isle of Wight AONB Management Plan 2014 – 2019 (Wight AONB Partnership)
- Kent Downs AONB Management Plan 2014-2019
- Partnership Plan for the New Forest National Park 2021-2026
- Public Rights of Way Improvement Plans (ROWIP)
- RSPB Pagham Harbour Local Nature Reserve Management Plan 2013-2018
- Surrey Hills AONB Management Plan 2020-2025
- Surrey Wildlife Trust 5-year Plan 2018-2023
- The High Weald AONB Management Plan 2019-2024
- The North Wessex Downs AONB Management Plan 2014-19
- Water Resources in the South East (WRSE) Group (forthcoming) regional water resources strategy
- West Sussex County Council (2005), A Strategy for the West Sussex Landscape
- Environment Agency (2007), Water for the Future - Managing Water in the South East of England
- Environment Agency (2009), Water Resources Strategy. Regional Action Plan for Southern Region
- South East Biodiversity Strategy (2009), South East England Biodiversity Forum Environment Agency (2010), Water Resources Strategy – A Regional Action Plan for Thames Region
- Defra (2010), Eel Management plans for the United Kingdom South East River Basin District and Implementation of UK Eel Management Plans (2017–2020)
- Environment Agency (2011), Water Resources Strategy – A Regional Action Plan for Thames Region
- Environment Agency, The Wild Trout Trust and the Atlantic Salmon Trust South Coast Sea Trout Action Plan (2011)
- Mayor of London (2011), Securing London's Water Future The Mayor's Water Strategy
- South Downs National Park (2013), Partnership Management Plan, Shaping the future of your south downs national park 2014-2019
- Environment Agency (2015), South West River Basin District, River basin management plan
- Environment Agency and Defra (2015), South East River Basin District River Basin Management Plan
- Environment Agency (2016), South East River Basin District Flood Risk Management Plan 2015 – 2021
- Environment Agency (2016), South West River Basin district Flood Risk Management Plan
- Environment Agency and Defra (2016), Thames River Basin District River Basin Management Plan
- Port of London Authority (2016) The Vision for the Tidal Thames
- Southern Water Business Plan 2020-25 (2019) Southern Water Environment Policy (2019)
- Southern Water WRMP (2019)
- Southern Water WRMP19 2020-2070 (2019)
- Water Resources Management Plans from adjacent water companies (2019)

2.2.2. Identification of Key Themes

The main themes, messages and objectives from the policies, plans and programmes review that are considered relevant to the WRMP24 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 infrastructure;²⁸
- 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 communities;²⁹
- Promote social inclusion and community participation;
- Carbon sequestration with the aim of net zero carbon emissions by 2050 as per Paris Climate Agreement (and legislation passed by UK govt. in 2018);
- Habitat creation and safeguarding ecosystem services (Woodland Carbon Guarantee scheme in line with the Woodland Carbon Fund);
- Catchment management / nature-based solutions working to enhance natural processes (existing work through a Catchment Based Approach (CaBA));
- Reduce water waste and leakage (Ofwat targets and penalties);
- Improve resilience to extreme droughts ensuring consistency with WRMP24 (1/500 year resilience);
- Protect cultural heritage assets including archaeology and built heritage;

²⁸ 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

²⁹ 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>

- Protect best quality soils and agricultural land.
- Support the Lawton recommendation³⁰ 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;
 - ▶ Accelerate the programme to reduce nutrient overload, particularly from diffuse pollution.
- Support the UK Government's 25 Year Plan to Improve the Environment³¹:
 - ▶ Using and managing land sustainably – including embedding an “environmental net gain” principle into development (as reflected in the Environment Act 2021³²);
 - ▶ 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 have been used to identify key issues and opportunities and develop the SEA Framework.

³⁰ 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>

³¹ 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

³² UK Government (2021). Environment Act 2021. Available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

3. Environmental Baseline Review

3.1. Introduction

The SEA Regulations require a report containing ‘*The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme*’ (Schedule 2(2)), ‘*The environmental characteristics of areas likely to be significantly affected*’ (Schedule 2(3)), and ‘*Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds(1) and the Habitats Directive*’ (Schedule 2(4))’.

In this context, an essential part of the SEA process is the identification of the current baseline conditions and their likely evolution. Only with a knowledge of existing conditions, and a consideration of their likely evolution, can the effects of the draft WRMP24 be identified and appraised and its subsequent success or otherwise be monitored. This is also useful in determining the key issues for each topic that should be taken forward in the SEA, through the SEA objectives and guide questions.

Full environmental baseline data are presented in **Appendix C** and have been drawn from a variety of sources, including a number of the plans and programmes reviewed as part of the SEA process (as set out above in **Table 2-1**). This environmental baseline review also summarises the likely future trends for the environmental issues being considered (as far as information is available). The key issues arising from the review of baseline conditions are summarised in **Section 3.2**.

3.2. Key Issues and Opportunities

| SEA topic | Scoped in | Implications | Opportunities |
|-------------------------------|-----------|---|---|
| Biodiversity, Flora and Fauna | Yes | <p>The WRMP24 area 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 WRMP24 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 WRMP24 should ensure that it does not affect these areas through over abstraction and should look for opportunities to reduce abstraction pressure where possible. Best value outcomes can be identified through combining nature-based solutions work with abstraction reduction scenarios.</p> <p>WRMP24 policies should be more clearly aligned to the 25 Year Environment Plan, including commitments on how the WRMP24 can contribute to the 25 Year Environment Plan policies.</p> | <p>The key sustainability issues arising from the baseline assessment for biodiversity are:</p> <ul style="list-style-type: none"> ■ The need to protect or enhance and support the achievement of favourable condition and conservation status WRMP24 area's biodiversity, particularly within designated sites, species and habitats of principal importance, informed by the evidence base. ■ The need to consider the implications of effluent re-treatment options on existing discharges from wastewater treatment works and the consequences for nutrients within receiving waters. ■ The need to avoid activities likely to cause irreversible damage to natural heritage. ■ The need to take opportunities to improve connectivity between fragmented habitats to create functioning habitat corridors and habitat patches or stepping stones. ■ The need to take opportunities to deliver biodiversity net gains. ■ The need to control the spread of Invasive Non-Native Species (INNS). ■ The need to recognise the importance of building wildlife's resilience to, and allowing wildlife to adapt to climate change. ■ The need to engage more people in biodiversity issues so that they personally value biodiversity and know what they can do to help, including through recognising the value of the ecosystem services. |

| SEA topic | Scoped in | Implications | Opportunities |
|-----------|-----------|---|---|
| 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 WRMP24 to have a negative impact on water quality.</p> <p>Areas of the WRMP24 area are at high risk of flooding from both surface water and rivers and the sea. There is potential that the options within the WRMP24 could be affected by or contribute to an increased risk of flooding.</p> | <p>The key issues arising from the baseline assessment for water are:</p> <ul style="list-style-type: none"> ■ The need to further improve the quality of the regions river, estuarine, wetlands and coastal waters taking into account WFD objectives. ■ The need to maintain the quantity and quality of groundwater resources taking into account WFD objectives. ■ The need to improve the resilience, flexibility and sustainability of water resources in the WRMP24 area, particularly in light of potential climate change impacts on surface water and groundwaters. ■ The need to ensure sustainable abstraction to protect the water environment and meet society's needs for a resilient water supply. ■ The need to ensure that people understand the value of water. |
| Soil | Yes | <p>Agriculture has a dominant role in the landscape of the WRMP24 area. Agricultural land of Grades 2 and 3 is the most common.</p> <p>The options within the WRMP24 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>The key sustainability issues arising from the baseline assessment for soil, geology and land use are:</p> <ul style="list-style-type: none"> ■ The need to protect and enhance geological features of importance (including geological SSSIs). ■ The need to maintain and enhance soil function and health, including its role as a carbon sink. ■ The need to manage the land and soil more holistically at the catchment level, benefitting landowners, other stakeholders, the environment and sustainability of natural resources (including water resources and best and most versatile soils). |
| Air | Yes | <p>Air quality in the region is varied. Generally, it is good, however there are some areas designated as</p> | <p>The key sustainability issues arising from the baseline assessment for air are:</p> |

| SEA topic | Scoped in | Implications | Opportunities |
|--|-----------|--|---|
| | | <p>AQMAs. Air pollution sources include transport and industry.</p> <p>The options within the WRMP24 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> | <ul style="list-style-type: none"> The need to reduce air pollutant and greenhouse emissions and limit air emissions to comply with air quality standards. |
| Climatic Factors | Yes | <p>The WRMP24 area is projected to have hotter and drier summers, and wetter and warmer winters, as well as short duration “extreme weather events” such as thunderstorms and heatwaves. There is potential that this could affect water availability through increases in periods of drought.</p> <p>There is also potential for options within the WRMP24 to result in carbon emissions during the construction and operation phase which will further contribute to climate change.</p> <p>Increased demand due to extreme events (i.e. heatwaves). Greater risks to rapid responding catchments (i.e. North Sussex clay catchments).</p> | <p>The key sustainability issues arising from the baseline assessment for climatic factors are:</p> <ul style="list-style-type: none"> The need to reduce greenhouse gas emissions (industrial processes and transport). The need to adapt to the impacts of climate change for example through, sustainable water resource management, water use efficiencies, specific aspects of natural ecosystems (e.g. connectivity) as well as accommodating potential opportunities afforded by climate change. |
| Population, Communities and Human Health | Yes | <p>Population is expected to grow which will likely place additional pressure on the water environment within the WRMP24 area. Economic growth and climate change will also add to this pressure. Health is generally good.</p> <p>The options within the WRMP24 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>The key sustainability issues arising from the baseline assessment for population and human health are:</p> <ul style="list-style-type: none"> The need to ensure water supplies remain affordable especially for deprived or vulnerable communities, reflecting the importance of water for health and wellbeing. The need to ensure water supplies contribute to improvements in levels of health, particularly in urban areas and deprived areas. The need to ensure water quantity and quality is maintained for a range of uses including tourism, recreation, navigation and other use such as agriculture. The need to ensure a balance between different aspects of the built and natural environment that |

| SEA topic | Scoped in | Implications | Opportunities |
|----------------------|-----------|---|---|
| | | | <p>will help to provide opportunities for local residents and tourists, including opportunities for access to, protecting and enhancing recreation resources, green infrastructure and the natural and historic environment.</p> <ul style="list-style-type: none"> ■ The need to accommodate an increasing population and housing growth through provision of essential services including water supply. ■ Sites of nature conservation importance, heritage assets, water resources, important landscapes and public rights of way contribute to recreation and tourism opportunities and subsequently health and wellbeing and the economy. ■ The need to reduce the risk of harm from environmental hazards, such as flooding and drought. |
| Historic Environment | Yes | <p>The WRMP24 area 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 WRMP24 have the potential to directly or indirect impact the historic environment through effecting the asset's fabric or setting.</p> | <p>The key sustainability issues arising from the baseline assessment for archaeology and cultural heritage are:</p> <ul style="list-style-type: none"> ■ The need to conserve or enhance sites of archaeological importance and cultural heritage interest, particularly those which are sensitive to the water environment. ■ The need to protect water-dependent heritage sites during drought and flood conditions. |
| Landscape | Yes | <p>The WRMP24 area'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 WRMP24 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>The key sustainability issues arising from the baseline assessment for landscape and visual amenity are:</p> <ul style="list-style-type: none"> ■ The need to protect and improve the natural beauty of the area's AONBs, National Parks and other areas of natural beauty. ■ The need to protect and improve the character of landscapes and townscapes. |

| SEA topic | Scoped in | Implications | Opportunities |
|-----------------|-----------|---|---|
| Material Assets | Yes | <p>The WRMP24 area contains important transport links which could be affected during construction works. There is also significant water and wastewater treatment infrastructure across the WRMP24 area. The WRMP24 area also produces and manages a significant amount of waste.</p> <p>The WRMP24 has the potential to increase the use of resources and result in the generation of waste.</p> | <p>The key sustainability issues arising from the baseline assessment for material assets and resource use are:</p> <ul style="list-style-type: none"> ■ The need to minimise the consumption of resources, including water and energy. ■ The need to reduce the total amount of waste produced in the region, from all sources, and to reduce the proportion of this waste sent to landfill. ■ The need to continue to reduce leakage from the water supply system to help reduce demand for water. ■ Daily consumption of water is relatively high and consequently there is a continued need to encourage more efficient water use by consumers. |

3.3. Limitations of the data and assumptions made

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

The data gathered to complete the baseline largely pre-dates the Covid-19 pandemic and its environmental, social and economic effects. Data that relates to these changes is only becoming available periodically and it may well be a number of years before the effects of the crisis can be determined, along with whether changes to the topics covered in the baseline have been short-term or sustained. This is an additional uncertainty that will need to be identified within the subsequent assessment, and where appropriate, some qualitative commentary may be provided regarding the evolution of the baseline.

The assessments presented in Section 5 and 6 include consideration of the uncertainty and limitations of the available data and comments are provided as to any underpinning assumptions made where data are lacking or dated.

3.4. Inter-relationships

It is noted that there are inter-relationships between SEA topics. These include impacts of changes to water flows and quality on biodiversity, the economy, recreation, tourism, navigation, cultural heritage and landscape. Inter-relationships that result in changes to individual effects are considered by evaluation of synergistic effects throughout the assessment.

4. Methodology

4.1. Overview

This section describes the approach to the assessment of SWS's WRMP24. It draws on the information contained in Sections 2 and 3, to define the scope of the assessment (in terms of the environmental and socio-economic issues to be considered) and sets out the SEA objectives and guide questions that comprise the assessment framework. The section then outlines how this assessment framework will be used to assess the options contained in the WRMP24.

4.2. The Scope of the Assessment

4.2.1. Topics

The aim of SEA is to identify, describe and evaluate the likely significant effects of implementing the WRMP24 on the environment. Schedule 2 of the SEA Regulations require that the assessment includes information on the “*likely significant effects on the environment, including on issues such as: biodiversity; population; human health; fauna; flora; soil; water; air; climatic factors; material assets; cultural heritage, including architectural and archaeological heritage; landscape; and the inter-relationship between the issues referred to*”.

The key policy objectives identified from the review of other plans and programmes relevant to the assessment of the WRMP24 (Section 2) and the economic, social and environmental issues arising from the analysis of the baseline (Section 3), together with the characteristics of the water resource management options, have been used to define the scope of the assessment in terms of the topics set out in Schedule 2 of the SEA Regulations.

In this instance, all SEA topics identified by Schedule 2 of the SEA Regulations have been scoped in for assessment.

4.2.2. Geographic Scope

The geographic extent of each SEA will reflect the operational area covered by SWS's WRMP24.

Where water resource options include transfers and potential water trading options between companies, where appropriate further consideration will be given to the effects outside the operational area of the plan under consideration. This also extends to the assessment of cumulative effects, where consideration of plans or programmes that cover areas that either overlap or are adjacent to the plan being assessed are also taken into account.

4.2.3. Timescales

When considering the timing of potential effects of the WRMP24, the assessment has classified effects as ‘short,’ ‘medium’ or ‘long-term.’ This reflects an intention to capture the differences that could arise at different timescales, consistent with the requirements of Schedule 1 (2)(a) of the SEA Regulations where the assessment of the effects should have regard to “*the probability, duration, frequency and reversibility of the effects*”.

Table 4-1 below summarises the timescales applied in the SEA informed by the 5-year cycle of review of the plan. For the purposes of this assessment, short-term will be considered as up to 1 year, medium-term (from 1 year to 5 years (to the end of the plan review cycle)) and long-term for the period beyond 5 years (i.e. beyond the plan review (5 year AMP) cycle).

Table 4-1 Duration of Short, Medium and Long Term

| Estimated Length (years) | Duration |
|--------------------------|----------|
| 0-1 years | Short |
| >1-5 years | Medium |
| Over 5 years | Long |

4.3. The SEA Assessment Framework

Derived from the WRSE Scoping Report, an overarching set of SEA objectives and assessment questions to guide the assessment is shown in **Table 4-2**.

Table 4-2 SEA objectives and assessment questions

| SEA Topic | SEA Objective | Assessment Questions |
|--------------------------------|--|---|
| 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 and MCZ, undermine or prevent restoration of SSSI condition or affect the condition of 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, priority habitat or 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 habitats and species "of principal importance for the purpose of conserving biodiversity" covered under Section 41 (England) of the NERC Act (2006)? • 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? • Does the option enable or reduce the potential of water dependent wildlife to adapt to climate change? |
| 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? |

| SEA Topic | SEA Objective | Assessment Questions |
|------------------|--|--|
| | | <ul style="list-style-type: none"> • Is the option likely to affect geodiversity, including SSSIs of geological importance? • Will the option promote the sustainable use of land? • Will the option prevent nutrient loading in water bodies? |
| Water | Increase resilience and reduce flood risk | <ul style="list-style-type: none"> • Is the option vulnerable to flood risk? • Will the option contribute to the risk of flooding? • Will the option mitigate flood risk? (i.e. attenuation of flows through (Natural Flood Management (NFM), catchment storage etc.) |
| | 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? • Will the option comply with flow targets (i.e. EFI, CSMG)? • Will the option provide a water environment more resilient to drought or prolonged dry weather? |
| | 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? • Does the option reduce the presence of containments in waterbodies, and make more water available to the environment? |
| 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? |
| Landscape | Conserve, protect and enhance landscape, townscape and | <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? |

| SEA Topic | SEA Objective | Assessment Questions |
|-----------------------------|---|---|
| | seascape character and visual amenity | <ul style="list-style-type: none"> • 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? • 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? |

4.4. Undertaking the Assessment

4.4.1. Option Assessment

The assessment framework set out in **Table 4-4** (below) has been used to assess each of the constrained and preferred options against the SEA objectives. The outcomes of the assessment have been used to inform the development of the WRMP24.

The first and second columns set out the SEA topics and objectives. The third, fourth and fifth columns provides the scoring and commentary of the impact of each option on the objectives for each topic, with reference to the key questions set out above in

Table 4-2. The assessment assumes the implementation of standard industry best practice methods in implementing the measures as well as any defined mitigation measures (which are set out in the commentary) such that the significance of effects relates to the residual effects after the application of any mitigation measures in line with the ODPM Practical Guide and UKWIR SEA national guidance. Following proposed mitigation (if required) set out in the sixth column, residual construction and operation effects are recorded in the seventh and eighth columns. The scoring is used for the assessment of the likely significant effects of each option.

Where qualitative and/or quantitative information was available this has been used to inform the assessment. Objectives or key questions that are not supported by available data or information have been evaluated using spatial analysis, professional judgement and applicable assessment guidelines relating to that topic/objective.

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

The assessment criteria used to score the performance of the options is set out in **Appendix E**.

Table 4-3 SEA assessment framework completed for each WRMP24 Option

| SEA Topic | SEA Objective | Construction Effects | | Operational Effects | | Commentary | Mitigation | Residual Construction Effects | | Residual Operational Effects | |
|-------------------------------|--|----------------------|---|---------------------|---|------------|------------|-------------------------------|---|------------------------------|---|
| | | 0 | - | 0 | - | | | 0 | 0 | 0 | - |
| Biodiversity, flora and fauna | Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | 0 | - | 0 | - | Etc | etc | 0 | 0 | 0 | - |
| Soil | Etc | | | | | | | | | | |
| Water | | | | | | | | | | | |
| etc | | | | | | | | | | | |

Table 4-4 Qualitative Scoring System

| Score | Description | Symbol |
|-----------------------------------|---|--------|
| Major/Significant Positive Effect | Major positive effect of the water resource option on this objective | +++ |
| Moderate Positive Effect | Moderate positive effect of the water resource option on this objective | ++ |

| Score | Description | Symbol |
|-----------------------------------|---|--------|
| Minor Positive Effect | Minor positive effect of the water resource option on this objective | + |
| Neutral | Neutral effect of the water resource option on this objective | 0 |
| Minor Negative Effect | Negative effect of the water resource option on this objective | - |
| Moderate Negative Effect | Moderate effect of the water resource option on this objective | -- |
| Major/Significant Negative Effect | Major negative effect of the water resource option on this objective | --- |
| Uncertain | The water resource option has an uncertain relationship to the objective or the relationship is dependent on the way in which the aspect is managed. In addition, insufficient information may be available to enable an assessment to be made. | ? |

An ESRI ArcGIS tool was developed to store most of the environmental data and was used to identify the key constraints and opportunities for each option and then professional judgement was applied to score the option using the scoring method in **Appendix F**. The SEA assessment was split into construction effects and operational effects as these can 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 was used to show there are potential mixed effects. The results of the HRA and WFD assessments fed into the SEA objectives on biodiversity and water topics.

The outcomes of the SEA were translated into metrics to feed into the WRSE multi-criteria optimisation for options selection, programme appraisal. They were also used as part of the Best Value Planning metrics SWS used to decide the Best Value Plan.

Summarising the effects assessment

The completed appraisal framework tables for each option are presented in **Appendix F**. The completed appraisal framework table for each option is also accompanied by a summary comprising an overview of the adverse and beneficial. In assessing each alternative measure, the effects (beneficial or adverse) of any interactions between SEA topics are also identified, assessed and reported.

A summary visual evaluation matrix has been completed for each option and is presented in Section 5. Each coloured box represents the assessed significance of effect for that SEA objective for the particular WRMP24 option (for example, a red box indicates a major adverse significance of effect whilst blue indicates a negligible significance of effect and dark green a major beneficial significance of effect). Adverse and beneficial effects are kept separate in line with SEA best practice.

4.4.2. Secondary, Cumulative and Synergistic Environmental Effects

Schedule 2(6) of the SEA Regulations requires the assessment of “*the likely significant effects on the environment, including short, medium and long-term effects, permanent and temporary effects, positive and negative effects, and secondary, cumulative and synergistic effects...*” For the purposes of this report, “cumulative effects” is taken to include secondary and synergistic effects.

A cumulative effects assessment has been carried out in order to identify if different options are mutually exclusive or whether combinations of measures might lead to greater adverse impacts (or beneficial effects).

This involved examining the likely significant effects of each of the WRMP24 options individually, in combination with each other (both inter- and intra- water resource zone), and in combination with the implementation of other plans and programmes. A matrix has been used to help consider interactions between the options. In assessing these effects, consideration has been given to other factors which may affect the receiving environment during implementation of the options.

The following cumulative assessments have been undertaken (see Section 7 for the assessment findings):

- An assessment of cumulative effects of WRMP24 options that could potentially be implemented at the same time. Mutually exclusive options are also identified.
- Assessment of cumulative effects of the WRMP24 with the SWS Drought Plan, other water company WRMPs and drought plans.
- Assessment of potential cumulative effects of the SWS's draft WRMP24 with any other identified relevant programmes, plans and projects that may be in place / implemented during the period of the WRMP24.

Neighbouring water companies will be invited to comment on the WRMP24 and SWS is also continuing its communications with neighbouring companies regarding potential measures in their respective WRMPs to identify any new trans-boundary issues that may arise. Potential effects with other plans are identified, particularly in the context of spatial and temporal proximity.

4.4.3. Reasonable Alternative Plan Assessment

SEA Regulation 12(2) requires the identification, description and evaluation of “*the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme*”. The EC guidance³³ on the SEA Directive discusses possible interpretations of handling ‘reasonable alternatives’. It states that “*The alternatives chosen should be realistic. Part of the reason for studying alternatives is to find ways of reducing or avoiding the significant adverse effects of the proposed plan or programme. Part of the reason for studying alternatives is to find ways of reducing or avoiding the significant adverse effects of the proposed plan or programme*”. Echoing this, Government guidance³⁴ of the SEA states “*Only reasonable, realistic and relevant alternatives need to be put forward. It is helpful if they are sufficiently distinct to enable meaningful comparisons to be made of the environmental implications of each*”. It is an area of plan making that has received considerable scrutiny and challenge.

SWS has used an adaptive planning approach to the development of the draft WRMP24 as promoted by the National Framework and the WRPG. In consequence, SWS considered 6 growth scenarios, 28 climate change scenarios and 5 Environmental Destination scenarios. This led to a multiplicity of outcomes. SWS identified nine different situations as representative of different combinations of population growth, climate change and environmental ambition expressed as different magnitudes of supply-demand deficit. There are then different branch and decision points. SWS has selected the core ‘reported pathway’, informed by discussion with WRSE and regulators which is fully adaptive across the whole range of the future situations. Given the complexities, the sophistication of the adaptive plan pathways and flexibility of the Preferred Plan, effective

³³ EC (2003) *Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment*.

³⁴ Office of the Deputy Prime Minister et al (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf [Accessed June 2019]

environmental assessment of outputs (as reasonable alternatives) has not been undertaken. For the purposes of this SEA, the constrained options have been considered as reasonable alternatives to the preferred options (that comprise the Preferred Plan). In using a WRSE methodology that converts individual option SEAs into metric values for use in decision making on the selection of the best value plan, SWS has however, been able to consider the environmental implications of the many different outcomes and possible plan pathways.

4.5. Limitations of the Assessment

SEA is a planning level assessment aimed at highlighting potential environmental concerns at a strategic level. Where particular limitations or outstanding issues are known, these are described in the SEA appraisal tables for the relevant water resources management option concerned. Further detailed assessment will still be required at the point of planning for the implementation of each option to take account of the prevailing environmental conditions and any new evidence that is available at that time.

Some broad assumptions have been applied when considering the potential for options. In summary:

- It is assumed that the relevant Catchment Abstraction Management Strategy (CAMS) documents are largely correct and reliable, and that there is 'water available for use' where this is confirmed by the CAMS.
- It is assumed that all normal licensing, consenting and management procedures will be employed at option delivery and throughout operation, and that established best-practice avoidance and mitigation measures will be employed throughout scheme design and construction to safeguard environmental receptors, including European site interest features.
- For desalination schemes, whilst it is possible that environmental changes could be experienced some distance from an outfall (mainly if there is limited mixing and stratified saline flows develop), many studies³⁵ have demonstrated that near-field dilution of brine to ambient levels typically occurs within a relatively short distance (tens or hundreds of metres rather than kilometres), and that impacts to benthic communities from concentrate discharges could be minimised by using properly-designed diffuser systems. However, at this stage, where appropriate a precautionary view on effects has been taken.
- For effluent re-use schemes it is assumed that all existing consents and permits (as they relate to water quality) can be met and that any material / effluent produced from the recovery process will be disposed of in landfill or returned to the head of the works for treatment (i.e. the recovery will reduce flow volumes but not water quality).
- Whilst leakage scenarios have been identified within the draft WRMP24, detailed option information of an equivalence to that for either the metering options or the supply options has not been available for assessment. The assessment will be undertaken as part of the revisions of the draft WRMP24 post consultation,

4.6. Links to the WRSE Regional Plan

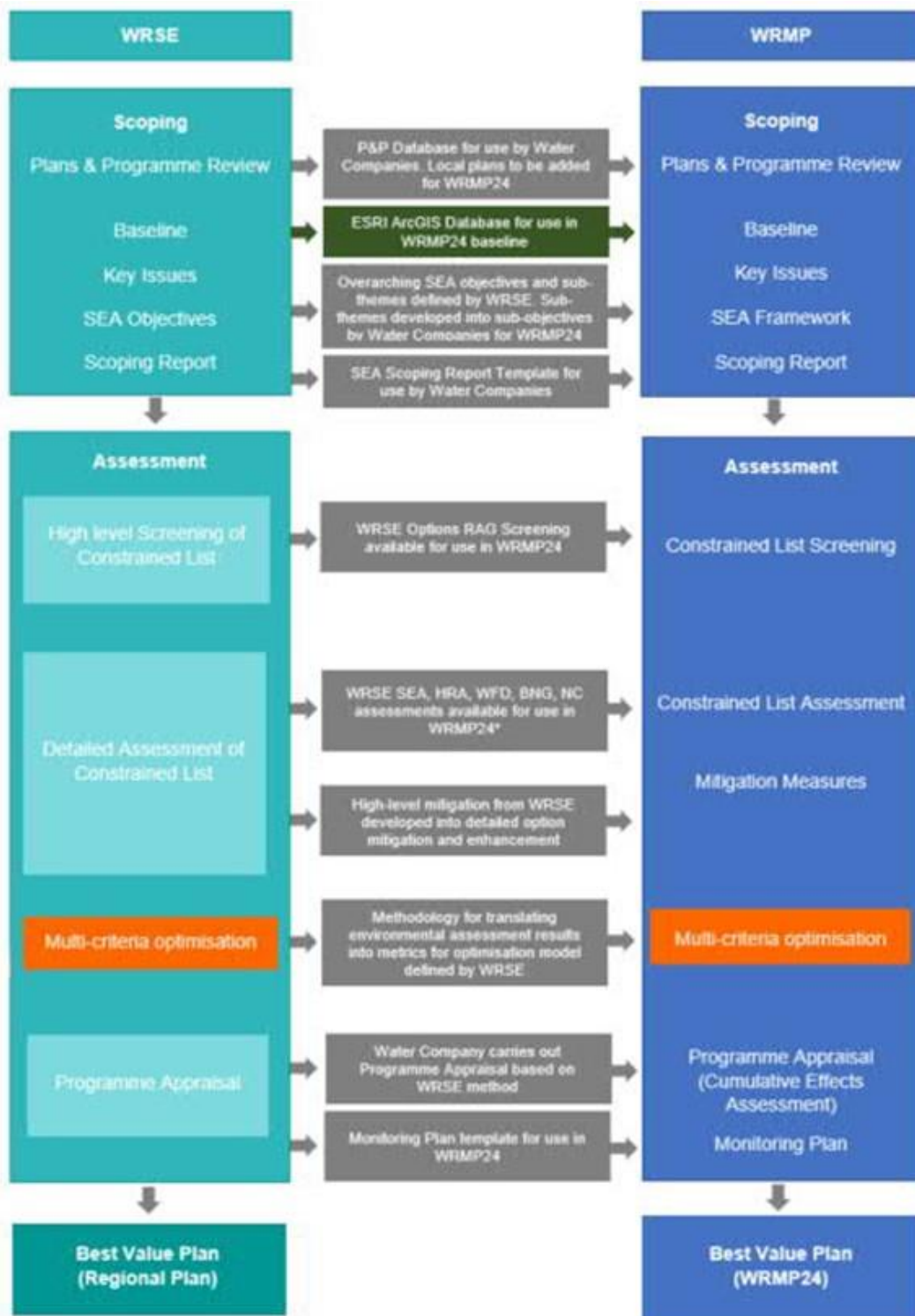
The WRSE regional plan environmental assessments including the SEA has been used as a framework for the WRSE member water companies when undertaking their WRMP24 statutory environmental assessments. A large amount of the supporting information required for WRMP24 has been produced as

³⁵ e.g. Roberts DA, Johnston EL & Knott NA (2009) Impacts of desalination plant discharges on the marine environment: A critical review of published studies. *Water Research* 44 (2010) 5117-5128; Fernández-Torquemada Y, González-Correa JM, Loya A, Ferrero LM, Díaz-Valdés M (2009) Dispersion of brine discharge from seawater reverse osmosis desalination plants. *Desalination and Water Treatment* 5 (2009) 137–145; Portillo E., Ruiz de la Rosa M., Louzara G., Quesada J., Ruiz J.M. & Mendoza H. (2014) Dispersion of desalination plant brine discharge under varied hydrodynamic conditions in the south of Gran Canaria, *Desalination and Water Treatment*, 52:1-3, 164-177.

part of the regional plan environmental assessments which were made available for use by the individual water companies. **Figure 4.1**³⁶ shows the interactions between the two processes and information 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.

³⁶ WRSE (2022) WRSE (2022) WRSE Regional Plan Strategic Environmental Assessment Report. Report for WRSE by Mott MacDonald Figure 4-2

Figure 4-1 Interactions and Information Exchange between the WRSE assessment and WRMP process



* Options would only need to be re-assessed by Water Companies if the option elements changed from those assessed as part of the regional plan, an unconstrained option was brought forward that wasn't on the regional plan constrained list, or additional local level baseline was included (this would only require re-assess of the relevant SEA objective)

The interactions and the need for consistency between the Regional plan and the WRMP's assessments has meant that the approach and resultant SWS constrained option assessments are consistent with those contained in the WRSE Emerging Regional Plan SEA³⁷. These were completed to support the decision making and investment modelling completed by WRSE.

³⁷ WRSE (2022) WRSE Regional Plan Strategic Environmental Assessment Report. Report for WRSE by Mott MacDonald.

5. Assessment of WRMP24 Objectives and Options

This section presents an analysis of the compatibility of the draft WRMP24 objectives with the SEA objectives to determine the extent to which there may be any inherent inconsistencies which are then reflected in proposed options identified to progress the plan objectives. The section then goes to detail the assessment of the effects from the constrained options.

5.1. Compatibility of the SEA Objectives with the WRMP24 Objectives

It is important that the objectives of the WRMP24 are compatible with the SEA objectives. A compatibility assessment of the SEA and WRSE regional plan objectives is presented in **Table 5-1**. The following key has been used to illustrate the objectives compatibility:

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

The compatibility matrix demonstrates that the SEA and WRMP24 Objectives are broadly compatible with one another. However, there are a number of potentially uncertain relationships associated with the WRMP24 Objective: “Ensuring a reliable supply of high quality water for the future” and the following SEA Objectives:

- Protect and enhance biodiversity and vulnerable habitats
- Reduce and minimise air emissions.
- Reduce embodied and operational carbon emissions
- Conserve, protect and enhance landscape, townscape and seascape character and visual amenity
- Conserve, protect and enhance the historic environment, including archaeology
- Minimise resource use and waste production

In these instances, particular attention will need to be paid to proposals that seek to increase water storage capacity and/or supply through appropriate impact assessment of specific schemes, as well as the likely mitigation of emissions and resource use associated with construction and operation.

Table 5-1 SEA and WRMP24 Objectives compatibility matrix

| SEA Objectives | WRMP24 Objectives | | | |
|---|--|--|--|---|
| | Deliver a secure and wholesome supply of water | Increase the resilience of water systems | Deliver environmental and social benefit | Deliver at a cost that is acceptable to customers |
| 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 | 0 | + | + | + |
| 3. Increase resilience and reduce flood risk | + | + | + | + |

WRMP24 Objectives

| SEA Objectives | Deliver a secure and wholesome supply of water | Increase the resilience of water systems | Deliver environmental and social benefit | Deliver at a cost that is acceptable to customers |
|---|--|--|--|---|
| 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 | / | 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 | / | + | + | + |
| 14. Avoid negative effects on built assets and infrastructure | 0 | 0 | + | + |

5.2. Assessment of the Effects of the Constrained Options by WRZ

Assessment of the WRM24 Options has been carried out in accordance with the methodology described in Section 4. Options for the following WRZs have been considered:

Western Area – comprising the following seven WRZs:

- Hants Near Basingstoke (HKZ)
- Hants Andover (HAZ)
- Isle of Wight (IOW)
- Hants Rural (HRZ)
- Hants Winchester (HWZ)
- Hants Southampton East (HSE)
- Hants Southampton West (HSW)

Central Area – comprising the following three WRZs:

- Sussex North (SNZ)
- Sussex Worthing (SWZ)
- Sussex Brighton (SBZ)

Eastern Area – comprising the following four WRZs:

- Kent Medway East (KME)
- Kent Medway West (KMW)
- Kent Thanet (KTZ)
- Sussex Hastings (SHZ)

SEA assessment framework tables have been completed for each of the 318 constrained options and are presented in full in **Appendix I**. As would be expected given the wide range of water resource options considered, a diverse range of effects have been identified for options, noting that the assessment was proportionate to the level of information available. Significant effects were identified for SEA topics including biodiversity, flora and fauna, landscape, population and human health, with effects on designated sites and features a key determinant of identifying likely significant effects:

The findings of the completed individual option SEA were used as part of the more detailed option screening, with considered the following criteria:

- **Environmental and social assessment** – which used the findings of the SEA and HRA screening to highlight:
 - the risk of adverse effects and, where available, mitigation measures; and
 - the opportunity for beneficial effects (e.g. improved water quality, reduced flood risk, improved catchment management) resulting from the option.
- **Links to other options** – in terms of mutual exclusivities and dependencies
- **Risks** – including vulnerability of the option to future uncertainty relating to climate change impacts, regulatory changes, sustainability and acceptability of the option, potential planning constraints and risks and changes in customer behaviour (for some demand management options).
- **Phasing** – whether the option can be constructed in a phased or modular way, which would increase its flexibility to future changes in the forecast supply-demand balance
- **Resilience** – an indication of the confidence that the option will ‘deliver’ the required supply-demand balance benefit.

In moving from constrained options to preferred options, the reasons why options have not been selected includes effects identified through the SEA (and HRA and WFD processes), for example:

- Potential effects upon SSSI/SAC from options which could not be addressed by standard mitigation measures or construction best practice (or arise from option operation) with an acknowledgement that any adverse unmitigable effects would increase risk of planning consent not being granted.
- Significant and potentially non-compliant effects on water quality from option operation during period of low flows.
- Option uncertainties arising from insufficient progress on option definition resulting in potential, environmental effects.

5.3. Assessment of the Effects of the Preferred Supply Options

The 318 constrained options have been refined to 122 preferred supply options following the process set out **Section 1.4.3**. A full list of the preferred options is presented in **Appendix E**. SEA assessment framework tables have been completed for each of the preferred options and are presented in full in **Appendix H**.

This section presents a summary of the assessment of the preferred options with effects presented as colour-coded visual evaluation (VE) summary matrices (**Table 5-2**). The colour coding of the assessment reflects a range from major adverse effect in red through to major beneficial effects in dark green as shown in the legend below (consistent with the qualitative scoring matrix presented in **Table 4.5**).

| | | | |
|-----|----------------------|-----|----------------------|
| +++ | Significant Positive | - | Minor Negative |
| ++ | Moderate Positive | -- | Moderate Negative |
| + | Minor Positive | --- | Significant Negative |
| 0 | Neutral | ? | Uncertain |

Table 5-2 Visual evaluation matrix summary (post mitigation)

| SEA Topic | SEA Objective |
|-------------------------------|--|
| Biodiversity, flora and fauna | Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) |
| Soil | Protect and enhance the functionality, quantity and quality of soils |
| Air | Reduce and minimise air emissions |
| Water | 1. Increase resilience and reduce flood risk |
| | 2. Protect and enhance the quality of the water environment and water resources |
| | 3. Deliver reliable and resilient water supplies |
| Climatic Factors | 1. Reduce embodied and operational carbon emissions |
| | 2. Reduce vulnerability to climate change risks and hazards |
| Landscape | Conserve, protect and enhance landscape, townscape and seascape character and visual amenity |
| Historic Environment | Conserve, protect and enhance the historic environment, including archaeology |
| Population and Human Health | 1. Maintain and enhance the health and wellbeing of the local community |
| | 2. Maintain and enhance tourism and recreation |
| Material Assets | 1. Minimise resource use and waste production |
| | 2. Avoid negative effects on built assets and infrastructure |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| SNZ Sussex North | SWS_SNZ_RE-DRO_ALL_ALL_si_har_2 Pulborough surface water (Phases 1 to 3) Drought Permit/Order (2025 onwards) (23Ml/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_RE-OTH_ALL_ALL_neub-sn NEUBs - SNZ | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_RE-OTH_REP_ALL_bs_kmt_resil Reduce transfer to other commercial customers - SNZ | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_RE-OTH_ALL_ALL_tub-sn TUBs - SNZ | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_RE-DRO_ALL_ALL_si_wei_2 Weir Wood reservoir Drought Permit/Order (2025 onwards) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 |
| | | Operation (negative) | -- | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 | - | - | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm Petworth WSW return to service with | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | - | 0 | 0 | 0 | 0 | - | 0 | --- | 0 | 0 | - | - | - |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | a new borehole (4.0MI/d) | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_HI-IMP_PRT_ALL_pwh PWC to Pulborough (15MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_HI REU_RE1_ALL_for20 Littlehampton WwTW (15MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | -- | 0 | 0 | - | -- | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | 0 | - | 0 | 0 | -- | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| North | SWS_SNZ_HI-REU_RE1_ALL_env_cu_chu2_conj_u Horsham WTW conjunctive use with Church Farm, Pulborough (6.8Ml/d) | Construction (negative) | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | - | 0 | 0 | - | 0 | - | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_HI-RSR_RE1_ALL_bla River Adur Offline reservoir (19.5Ml/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | -- | - | - | 0 | - | 0 | 0 | - | - | - | - | - | - |
| | | Operation (positive) | + | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 |
| | | Operation (negative) | -- | 0 | - | - | 0 | 0 | - | - | -- | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_HI-IMP_SWZ_ALL_rm Rock Road bi-directional transfer (SW to SN) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| SNZ Sussex North | SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30 Pulborough to Tenants Hill Worthing: 30MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | -- | 0 | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_HI-TFR_PWE_ALL_havant -hardha r 20 Havant Thicket To Pulborough WTW: 20MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | 0 | 0 | 0 | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | 0 | 0 | 0 | -- | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | SWS_SNZ_HI-TFR_PWE_ALL_havant -hardha r 50 Havant Thicket To Pulborough WTW: 50MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | 0 | 0 | 0 | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|------------------|---------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | - | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | Outwood To Turners Hill: 10MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | 0 | 0 | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SNZ Sussex North | Tilmore to Pulborough: 10MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | -- | 0 | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Sussex North (SNZ) Commentary: There has been two significant effects identified amongst the sixteen options.

Construction effects:

Significant negative effects are identified in respect of:

- SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm: Petworth WSW return to service with a new borehole (4.0MI/d) [Landscape]

Moderate negative effects are identified in respect of:

- SWS_SNZ_HI_REU_RE1_ALL_for20: Littlehampton WwTW (15MI/d) [Water: Resilience]
- SWS_SNZ_HI_REU_RE1_ALL_for20: Littlehampton WwTW (15MI/d) [Climatic Factors: Carbon Emissions]
- SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30: Pulborough to Tenants Hill Worthing: 30MI/d [Biodiversity]
- Tilmore to Pulborough: 10MI/d: Tilmore to Pulborough: 10MI/d [Biodiversity]

Operation effects:

Significant negative effects are identified in respect of:

- SWS_SNZ_RE-OTH_ALL_ALL_neub-sn: NEUBs – SNZ [Population & Human Health: Health & Wellbeing]

Moderate negative effects are identified in respect of:

- SWS_SNZ_RE-OTH_ALL_ALL_neub-sn: NEUBs – SNZ [Population & Human Health: Tourism & Recreation]
- SWS_SNZ_RE-OTH_ALL_ALL_tub-sn: TUBs – SNZ [Population & Human Health: Health & Wellbeing]
- SWS_SNZ_RE-DRO_ALL_ALL_si_wei_2: Weir Wood reservoir Drought Permit/Order (2025 onwards) [Biodiversity]
- SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm: Petworth WSW return to service with a new borehole (4.0MI/d) [Landscape]
- SWS_SNZ_HI_REU_RE1_ALL_for20: Littlehampton WwTW (15MI/d) [Biodiversity]
- SWS_SNZ_HI_REU_RE1_ALL_for20: Littlehampton WwTW (15MI/d) [Climatic Factors: Carbon Emissions]
- SWS_SNZ_HI-TFR_PWE_ALL_havant -hardha r 20: Havant Thicket To Pulborough WTW: 20MI/d [Climatic Factors: Carbon Emissions]
- SWS_SNZ_HI-TFR_PWE_ALL_havant -hardha r 50: Havant Thicket To Pulborough WTW: 50MI/d [Climatic Factors: Carbon Emissions]
- SWS_SNZ_HI-RSR_RE1_ALL_bla: River Adur Offline reservoir (19.5MI/d) [Biodiversity]
- SWS_SNZ_HI-RSR_RE1_ALL_bla: River Adur Offline reservoir (19.5MI/d) [Landscape]

Moderate positive effects are identified in respect of:

- SWS_SNZ_HI-RSR_RE1_ALL_bla: River Adur Offline reservoir (19.5MI/d) [Water: Reliability]
- SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30: Pulborough to Tenants Hill Worthing: 30MI/d [Water: Reliability]
- SWS_SNZ_HI-TFR_PWE_ALL_havant -hardha r 50: Havant Thicket To Pulborough WTW: 50MI/d [Water: Reliability]

| | | | | | | | | | | | | | | | | |
|------------------------|---|-------------------------|----|----|---|---|---|---|---|---|---|---|---|---|---|---|
| SWZ Sussex Worthing | SWS_SWZ_HI- DES_ALL_ALL_aru10 Tidal River Arun (10MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | -- | -- | - | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | - | - | 0 | - | - | 0 | - | 0 | 0 | 0 | - | 0 |
| SWZ Sussex Worthing | SWS_SWZ_RE- DRO_ALL_ALL_si_mad_2 North Arundel Drought Permit/Order | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | (2025 onwards) (2.5MI/d) | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| SWZ Sussex Worthing | SWS_SWZ_RE-DRO_ALL_ALL_si_mad_2_v2 North Arundel Drought Permit/Order (2025 onwards) (2.5MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | - | 0 |
| SWZ Sussex Worthing | SWS_SWZ_RE-OTH_ALL_ALL_neub-sw NEUBs – SWZ | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 | 0 |
| SWZ Sussex | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| Worthing | SWS_SWZ_RE-DRO_ALL_ALL_dp_nor_2 East Worthing Drought Permit/Order (2025 onwards) (2.5Ml/d) | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | - | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 |
| SWZ Sussex Worthing | SWS_SWZ_RE-OTH_REP_ALL_bs_kmt_resil Reduce transfer to other commercial customers - SWZ | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| SWZ Sussex Worthing | SWS_SWZ_RE-OTH_ALL_ALL_tub-sw TUBs - SWZ | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|---------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| SWZ Sussex Worthing | SWS_SWZ_HI-LRE_ALL_ALL_har1 Pulborough winter transfer stage 1 - Provision of a permanent sludge treatment facility at Pulborough WSW (2MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | 0 | -- | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | -- | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SWZ Sussex Worthing | SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30 Pulborough to Tenants Hill Worthing: 30MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | -- | 0 | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Sussex Worthing (SWZ) Commentary: There has been one significant effect identified amongst the nine options.

Construction effects:

Moderate negative effects are identified in respect of:

- SWS_SWZ_HI-DES_ALL_ALL_aru10: Tidal River Arun (10MI/d) [Biodiversity]
- SWS_SWZ_HI-DES_ALL_ALL_aru10: Tidal River Arun (10MI/d) [Soils, Geodiversity and Land Use]
- SWS_SWZ_HI-LRE_ALL_ALL_har1: Pulborough winter transfer stage 1 - Provision of a permanent sludge treatment facility at Pulborough WSW (2MI/d) [Water: Quality]
- SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30: Pulborough to Tenants Hill Worthing: 30MI/d [Biodiversity]

Operation effects:

Significant negative effects are identified in respect of:

- SWS_SWZ_RE-OTH_ALL_ALL_neub-sw: NEUBs – SWZ [Population & Human Health: Health & Wellbeing]

Moderate negative effects are identified in respect of:

- SWS_SWZ_HI-DES_ALL_ALL_aru10: Tidal River Arun (10MI/d) [Biodiversity]
- SWS_SWZ_RE-DRO_ALL_ALL_si_mad_2: North Arundel Drought Permit/Order (2025 onwards) (2.5MI/d) [Water: Quality]
- SWS_SWZ_RE-DRO_ALL_ALL_si_mad_2_v2: North Arundel Drought Permit/Order (2025 onwards) (2.5MI/d) [Water: Quality]
- SWS_SWZ_RE-OTH_ALL_ALL_neub-sw: NEUBs – SWZ [Population & Human Health: Tourism & Recreation]
- SWS_SWZ_RE-OTH_ALL_ALL_tub-sw: TUBs – SWZ [Population & Human Health: Health & Wellbeing]
- SWS_SWZ_HI-LRE_ALL_ALL_har1: Pulborough winter transfer stage 1 - Provision of a permanent sludge treatment facility at Pulborough WSW (2MI/d) [Water: Quality]

Moderate positive effects are identified in respect of:

- SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30: Pulborough to Tenants Hill Worthing: 30MI/d [Water: Reliability]

| | | | | | | | | | | | | | | | | |
|---------------------|---|-------------------------|---|---|----|---|---|---|----|---|---|---|---|---|---|---|
| SBZ Sussex Brighton | SWS_SBZ_HI-DES_ALL_ALL_shom10 Sussex Coast (Modular 0-10MI/d) (10MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | -- | - | 0 | - | - | 0 | - | - | - | 0 | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | -- | - | 0 | - | -- | 0 | 0 | 0 | 0 | 0 | - | 0 |
| SBZ Sussex Brighton | SWS_SBZ_HI-DES_ALL_ALL_shom20 Sussex Coast (Modular 10-20MI/d) (10MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | -- | - | 0 | - | - | 0 | - | - | - | 0 | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | -- | - | 0 | - | -- | 0 | 0 | 0 | 0 | 0 | - | 0 |
| SBZ Sussex Brighton | SWS_SBZ_HI-DES_ALL_ALL_shom40 Sussex Coast (Modular 10-20MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | - | - | 0 | - | -- | 0 | - | - | - | 0 | - | - |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | (40MI/d) | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | - | 0 | - | - | 0 | 0 | 0 | 0 | 0 | - | 0 |
| SBZ Sussex Brighton | SWS_SNZ_RE-OTH_ALL_ALL_neub-sn NEUBs - SBZ | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 | 0 |
| SBZ Sussex Brighton | SWS_SBZ_RE-OTH_REP_ALL_bs_kmt_resil Reduce transfer to other commercial customers: Sussex Brighton | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| SBZ Sussex | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| Brighton | SWS_SNZ_RE-OTH_ALL_ALL_tub-sn TUBs - SBZ | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| SBZ Sussex Brighton | SWS_SBZ_EF-TFR_REP_ALL_har2 res Pulborough winter transfer stage 2 - New main between Shoreham WSW/North Shoreham WSW and Brighton A WSR (4MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | -- | - | - | -- | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | -- | 0 | 0 | - | 0 | - | 0 | 0 | 0 | 0 | 0 |
| SBZ Sussex Brighton | SWS_SBZ_HI-TFR_SWZ_ALL_v6b 2026 SWZ-SBZ additional through v6 valve (13MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|---------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| SBZ Sussex Brighton | SWS_SBZ_HI-TFR_SWZ_ALL_v6b SWZ-SBZ v6 valve (17Ml/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Sussex Brighton (SBZ) Commentary: Two significant effects have been identified amongst the nine options.

Construction effects:

Moderate negative effects are identified in respect of:

- SWS_SBZ_HI-DES_ALL_ALL_shom10: Sussex Coast (Modular 0-10MI/d) (10MI/d) [Water: Resilience]
- SWS_SBZ_HI-DES_ALL_ALL_shom20: Sussex Coast (Modular 10-20MI/d) (10MI/d) [Water: Resilience]
- SWS_SBZ_HI-DES_ALL_ALL_shom40: Sussex Coast (Modular 10-20MI/d) (40MI/d) [Climatic Factors: Carbon Emissions]
- SWS_SBZ_EF-TFR_REP_ALL_har2 res: Pulborough winter transfer stage 2 - New main between Shoreham WSW/North Shoreham WSW and Brighton A WSR (4MI/d) [Biodiversity]
- SWS_SBZ_EF-TFR_REP_ALL_har2 res: Pulborough winter transfer stage 2 - New main between Shoreham WSW/North Shoreham WSW and Brighton A WSR (4MI/d) [Water: Quality]

Operation effects:

Significant negative effects are identified in respect of:

- SWS_SNZ_RE-OTH_ALL_ALL_neub-sn: NEUBs – SBZ: [Population & Human Health: Health & Wellbeing]
- SWS_SBZ_HI-DES_ALL_ALL_shom40: Sussex Coast (Modular 10-20MI/d) (40MI/d) [Climatic Factors: Carbon Emissions]

Moderate negative effects are identified in respect of:

- SWS_SBZ_HI-DES_ALL_ALL_shom10: Sussex Coast (Modular 0-10MI/d) (10MI/d) [Water: Resilience]
- SWS_SBZ_HI-DES_ALL_ALL_shom10: Sussex Coast (Modular 0-10MI/d) (10MI/d) [Climatic Factors: Carbon Emissions]
- SWS_SBZ_HI-DES_ALL_ALL_shom20: Sussex Coast (Modular 10-20MI/d) (10MI/d) [Water: Resilience]
- SWS_SBZ_HI-DES_ALL_ALL_shom20: Sussex Coast (Modular 10-20MI/d) (10MI/d) [Climatic Factors: Carbon Emissions]
- SWS_SNZ_RE-OTH_ALL_ALL_neub-sn: NEUBs – SBZ: [Population & Human Health: Tourism & Recreation]
- SWS_SNZ_RE-OTH_ALL_ALL_tub-sn: TUBs – SBZ [Population & Human Health: Health & Wellbeing]
- SWS_SBZ_EF-TFR_REP_ALL_har2 res: Pulborough winter transfer stage 2 - New main between Shoreham WSW/North Shoreham WSW and Brighton A WSR (4MI/d) [Water: Quality]

Moderate positive effects are identified in respect of:

- SWS_SBZ_HI-DES_ALL_ALL_shom40: Sussex Coast (Modular 10-20MI/d) (40MI/d) [Water: Reliability]

| | | | | | | | | | | | | | | | | | |
|-------------------|---|-------------------------|----|---|---|----|---|---|---|---|---|---|---|---|---|---|---|
| IOW Isle of Wight | SWS_IOW_RE-DRO_ALL_ALL_env_lv_cal_westi | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IOW Isle of Wight | SWS_IOW_HI-ROC_ALL_ALL_env_lv_yar_westi | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | - | -- | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| IOW Isle of Wight | SWS_IOW_RE-OTH_ALL_ALL_neub-iw | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 |
| IOW Isle of Wight | SWS_IOW_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| IOW Isle of Wight | SWS_IOW_RE-DRP_ALL_ALL_env_lv_bow_westi | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|-------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| IOW Isle of Wight | SWS_IOW_RE-OTH_ALL_ALL_tub- iw | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| IOW Isle of Wight | SWS_IOW_HI- GRW_ALL_ALL_nw_gwa_kni_westi | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | 0 | 0 | 0 | 0 | - | - | 0 | - | 0 | - | 0 | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | - | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IOW Isle of Wight | SWS_IOW_HI- GRW_ALL_ALL_br_less | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | 0 | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-------------------|-----------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | 0 | 0 | 0 | - | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| IOW Isle of Wight | SWS_IOW_HI-REU_RE1_ALL_sey9 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | - | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|--|--------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| <p>Isle of Wight (IOW) Commentary:</p> <p>Construction Effects A moderate negative effect is identified in respect of:</p> <ul style="list-style-type: none"> SWS_IOW_HI-REU_RE1_ALL_sey9: Sandown WwTW Indirect Potable Reuse (8.5Ml/d) [Biodiversity] <p>Operation Effects A significant negative effect has been identified in respect of:</p> <ul style="list-style-type: none"> SWS_IOW_RE-OTH_ALL_ALL_neub-iw: [Health and Wellbeing] <p>Moderate negative effects are identified in respect of:</p> <ul style="list-style-type: none"> SWS_IOW_RE-DRO_ALL_ALL_env_lv_cal_westi: Caul Bourne [Water quality] SWS_IOW_HI-ROC_ALL_ALL_env_lv_yar_westi [Biodiversity and Water quality] SWS_IOW_RE-OTH_ALL_ALL_neub-iw [Tourism and Recreation] SWS_IOW_RE-DRP_ALL_ALL_env_lv_bow_westi [Water quality] SWS_IOW_RE-OTH_ALL_ALL_tub-iw [Health and Wellbeing] | | | | | | | | | | | | | | | | |
| | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-------------------|-------------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| HAZ Hants Andover | SWS_HAZ_RE-OTH_ALL_ALL_neub-ha | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 | 0 |
| HAZ Hants Andover | SWS_HAZ_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| HAZ Hants Andover | SWS_HAZ_RE-OTH_ALL_ALL_tub-ha | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | -- | - | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|-------------------|-----------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| HAZ Hants Andover | SWS_HAZ_HI-TFR_HWZ_ALL_oan2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | - | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---|--------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| <p>Hants Andover (HAZ) Commentary:</p> <p><u>Construction Effects</u></p> <p>A moderate negative effect has been identified in respect of:</p> <ul style="list-style-type: none"> SWS_HAZ_HI-TFR_HWZ_ALL_oan2: Otterbourne to Andover to Near Basingstoke - Crabwood to Micheldever [Biodiversity] <p><u>Operation Effects</u></p> <p>A significant negative effect has been identified in respect of:</p> <ul style="list-style-type: none"> SWS_HAZ_RE-OTH_ALL_ALL_neub-ha [Health and wellbeing] <p>Moderate negative effects are identified in respect of:</p> <ul style="list-style-type: none"> SWS_HAZ_RE-OTH_ALL_ALL_neub-ha [Tourism and recreation] SWS_HAZ_RE-OTH_ALL_ALL_tub-ha [Health and wellbeing] | | | | | | | | | | | | | | | | |
| HKZ Hants Near Basingstoke | SWS_HKZ_RE-OTH_ALL_ALL_neub-hk | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|----------------------------|-------------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 | |
| HKZ Hants Near Basingstoke | SWS_HKZ_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 | |
| HKZ Hants Near Basingstoke | SWS_HKZ_RE-OTH_ALL_ALL_tub-hk | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| | SWS_HKZ_HI-ROC_ALL_ALL_ewo | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------------|-----------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| HKZ Hants Near Basingstoke | | Construction (negative) | 0 | 0 | - | 0 | 0 | - | - | 0 | - | - | - | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | |
| HKZ Hants Near Basingstoke | SWS_HKZ_HI-TFR_HAZ_ALL_oan3 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | 0 | 0 | - | - | 0 | - | - | - | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|--|--------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| <p>Hants Near Basingstoke (HKZ) Commentary:</p> <p><u>Construction Effects</u></p> <p>A moderate negative effect is identified in respect of:</p> <ul style="list-style-type: none"> SWS_HKZ_HI-ROC_ALL_ALL_ewo [Landscape] <p><u>Operation Effects</u></p> <p>A significant negative effect has been identified in respect of:</p> <ul style="list-style-type: none"> SWS_HKZ_RE-OTH_ALL_ALL_neub-hk [Health and wellbeing] <p>Moderate negative effects are identified in respect of:</p> <ul style="list-style-type: none"> SWS_HKZ_RE-OTH_ALL_ALL_neub-hk [Tourism and recreation] SWS_HKZ_RE-OTH_ALL_ALL_tub-hk [Health and wellbeing] | | | | | | | | | | | | | | | | |
| HRZ Hants Rural | SWS_HRZ_RE-OTH_ALL_ALL_neub-hr | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-----------------|-------------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| HRZ Hants Rural | SWS_HRZ_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| HRZ Hants Rural | SWS_HRZ_RE-OTH_ALL_ALL_tub-hr | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 |
| | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|-----------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| HRZ Hants Rural | SWS_HRZ_HI-GRW_ALL_ALL_nw_gwa_tim_westi | Construction (negative) | - | - | 0 | 0 | 0 | - | - | 0 | - | - | - | - | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | 0 | 0 | 0 | - | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| HRZ Hants Rural | SWS_HRZ_HI-TFR_HSW_ALL_bro | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | 0 | - | 0 | 0 | 0 | - | 0 | - | 0 | 0 | 0 | - | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | - | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HRZ Hants Rural | SWS_HRZ_HI-IMP_HSW_ALL_rob1 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-----|--------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |

Hants Rural (HRZ) Commentary:

Construction Effects

None identified

Operation Effects

A significant negative effect has been identified in respect of:

- SWS_HRZ_RE-OTH_ALL_ALL_neub-hr [Health and wellbeing]

Moderate negative effects are identified in respect of:

- SWS_HRZ_RE-OTH_ALL_ALL_neub-hr [Tourism & recreation]
- SWS_HRZ_RE-OTH_ALL_ALL_tub-hr [Health and wellbeing]

| | | | | | | | | | | | | | | | | | |
|----------------------------|------------------------------------|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HWZ Hants Winchester | SWS_HWZ_RE- OTH_ALL_ALL_neub-hw | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|----------------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | -- | - | 0 | 0 | |
| HWZ Hants Winchester | SWS_HWZ_RE- OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| HWZ Hants Winchester | SWS_HWZ_RE- OTH_ALL_ALL_tub-hw | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | -- | - | 0 | 0 |
| HWZ Hants Winchester | SWS_HWZ_HI- TFR_HSE_CNO_oan1 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | 0 | 0 | 0 | - | - | 0 | - | - | - | - | - | - | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|----------------------------|-----------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HWZ Hants Winchester | SWS_HAZ_HI-TFR_HWZ_ALL_oan2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | -- | - | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---|---------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| <p>Hants Winchester (HWZ) Commentary:</p> <p><u>Construction Effects</u></p> <p>A moderate negative effect is identified in respect of:</p> <ul style="list-style-type: none"> SWS_HAZ_HI-TFR_HWZ_ALL_oan2 [Biodiversity] <p><u>Operation Effects</u></p> <p>A significant negative effect has been identified in respect of:</p> <ul style="list-style-type: none"> SWS_HWZ_RE-OTH_ALL_ALL_neub-hk [Health and wellbeing] <p>Moderate negative effects are identified in respect of:</p> <ul style="list-style-type: none"> SWS_HWZ_RE-OTH_ALL_ALL_tub-hw [Tourism and recreation] SWS_HWZ_RE-OTH_ALL_ALL_tub-hw [Health and wellbeing] | | | | | | | | | | | | | | | | |
| | SWS_HSW_RE-OTH_ALL_ALL_neub-hsw | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------------|-------------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| HSW Hants Southampton West | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| HSW Hants Southampton West | SWS_HSW_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| HSW Hants Southampton West | SWS_HSW_RE-DRO_ALL_ALL_si_tesdo2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | - | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|-------------------------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| HSW Hants Southampton West | SWS_HSW_RE- OTH_ALL_ALL_tub-hsw | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 |
| HSW Hants Southampton West | SWS_HSW_HI- GRW_RE1_ALL_str_asr_tes_westi | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | 0 | 0 | - | - | - | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | - | 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HSW Hants Southampton West | SWS_HSW_HI- ROC_WT1_ALL_cpy_tst_60 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | 0 | 0 | - | - | 0 | 0 | 0 | - | - | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | +++ | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-----|--------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |

Hampshire Southampton West (HSW) Commentary: there are two significant effects identified amongst the 6 options

Construction Effects

None identified

Operation Effects

A significant positive effect is identified in respect of:

- SWS_HSW_HI-ROC_WT1_ALL_cpy_tst_60: Treatment capacity: Upgrade Test Surface Water WSW (60MI/d) [Water reliability]

A significant negative effect is identified in respect of:

- SWS_HSW_RE-OTH_ALL_ALL_neub-hsw: Drought option: NEUBs – HSW [Health & well-being]

Moderate negative effects are identified in respect of:

- SWS_HSW_RE-OTH_ALL_ALL_neub-hsw: Drought option: NEUBs – HSW [Tourism & recreation]
- SWS_HSW_RE-OTH_ALL_ALL_tub-hsw: Drought option: TUBs – HSW [Health & well-being]
- SWS_HSW_HI-GRW_RE1_ALL_str_asr_tes_westi: Groundwater: Test Surface Water MAR (5.5MI/d) [Biodiversity]

| | | | | | | | | | | | | | | | | | |
|-------------------------------------|------------------------------------|-------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HSE Hants Southampton East | SWS_HSE_RE- DRO_ALL_ALL_si_can2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | --- | 0 | 0 | - | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_RE-DRO_ALL_ALL_si_ott2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | --- | 0 | 0 | -- | -- | 0 | 0 | - | - | 0 | 0 | - | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_RE-OTH_ALL_ALL_neub-hse | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 | 0 |
| | SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------------|-------------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| HSE Hants Southampton East | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | 0 | - | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_RE-OTH_ALL_ALL_tub-hse | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 |
| | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | | |
|-------------------------------------|-----------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | | |
| HSE Hants Southampton East | SWS_HSE_HI-TFR_PRT_ALL_pwc2 | Construction (negative) | - | - | - | - | 0 | - | - | 0 | - | - | - | - | - | - | | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_EF-TFR_REP_ALL_pwc1 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | - | - | - | 0 | - | - | 0 | - | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_HI-IMP_PRT_ALL_pwg | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|----------------------------|---------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| HSE Hants Southampton East | SWS_HSE_EF-TFR_REP_ALL_pwg_res2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_HI-REU_RE1_ALL_wol8 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_HI-TFR_HRZ_ALL_sla | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_HI-ROC_WT1_ALL_cpy_ott_30 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | 0 | 0 | 0 | 0 | - | - | 0 | - | 0 | - | 0 | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 |
| HSE Hants Southampton East | Otterbourne to Gaters Mill: 45MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SWS_HSE_HI-TFR_T2S_CNO_spar to ott 120 pot | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | - | - | 0 | - | - | - | - | - | - |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| HSE Hants Southampton East | | Operation (positive) | 0 | 0 | 0 | 0 | +++ | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| HSE Hants Southampton East | SWS_HSE_HI-TFR_T2S_CNO_spar to ott 50 pot | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | ++ | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 |

Hampshire Southampton East (HSE) Commentary: there are five significant effects identified amongst the 16 options

Construction Effects

Moderate negative effects are identified in respect of:

- SWS_HSE_HI-TFR_PRT_ALL_pwc2: Import: PWC Import from Portsmouth Water (21MI/d) [Historic environment]
- SWS_HSE_EF-TFR_REP_ALL_pwc1: Import: PWC Import from Portsmouth Water (9MI/d) [Historic environment]
- Otterbourne to Gaters Mill: 45MI/d: Otterbourne to Import from Portsmouth Water: 45MI/d [Historic environment]

Operation Effects

A significant positive effect is identified in respect of:

- SWS_HSE_HI-TFR_T2S_CNO_spar to ott 120 pot: Sparsholt to Otterbourne (120) Potable – Construction [Water reliability]

Significant negative effects are identified in respect of:

- SWS_HSE_RE-DRO_ALL_ALL_si_can2 Candover Drought Permit/Order (2027-2029 only) (15.4MI/d) [Biodiversity]
- SWS_HSE_RE-DRO_ALL_ALL_si_ott2: Lower Itchen (g/w and s/w sources) Drought Permit/Order (from 2027 onwards) (61.5MI/d) [Biodiversity]
- SWS_HSE_RE-OTH_ALL_ALL_neub-hse: Drought option: NEUBs – HSE [Health & well-being]
- SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi Drought option: Reduce HoF at Lower Itchen sources (38MI/d) [Biodiversity]

Moderate positive effects are identified in respect of:

- SWS_HSE_RE-DRO_ALL_ALL_si_ott2: Lower Itchen (g/w and s/w sources) Drought Permit/Order (from 2027 onwards) (61.5MI/d) [Water reliability]
- SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi: Reduce HoF at Lower Itchen sources (38MI/d) [Water reliability]
- SWS_HSE_HI-ROC_WT1_ALL_cpy_ott_30: Treatment capacity: Upgrade Otterbourne WSW (30MI/d) [Water reliability]
- SWS_HSE_HI-TFR_T2S_CNO_spar to ott 50 pot: Sparsholt to Otterbourne (50) Potable – Construction [Water reliability]

Moderate negative effects are identified in respect of:

- SWS_HSE_RE-DRO_ALL_ALL_si_ott2: Lower Itchen (g/w and s/w sources) Drought Permit/Order (from 2027 onwards) (61.5MI/d) [Water quality]
- SWS_HSE_RE-DRO_ALL_ALL_si_ott2: Lower Itchen (g/w and s/w sources) Drought Permit/Order (from 2027 onwards) (61.5MI/d) [Water reliability]
- SWS_HSE_RE-OTH_ALL_ALL_neub-hse: Drought option: NEUBs – HSE [Tourism & recreation]
- SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi: Reduce HoF at Lower Itchen sources (38MI/d) [Water quality]
- SWS_HSE_RE-OTH_ALL_ALL_tub-hse: Drought option: TUBs – HSE [Health & well-being]



| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|----------------------|-------------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| KME Kent Medway East | SWS_KME_RE-OTH_ALL_ALL_neub-kme | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 | 0 |
| KME Kent Medway East | SWS_KME_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 | 0 |
| KME Kent Medway East | SWS_KME_RE-OTH_ALL_ALL_tub-kme | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 | 0 |
| | SWS_KME_HI-REU_REI_ALL_sit8 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------|-----------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| KME Kent Medway East | | Construction (negative) | - | - | - | -- | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | 0 | -- | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KME Kent Medway East | SWS_KTZ_HI-TFR_KME_ALL_sfl | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KME Kent Medway East | SWS_KTZ_HI-TFR_KME_ALL_sel3 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | 0 | 0 | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | - | 0 | 0 | 0 | 0 | - | 0 | - | 0 | 0 | 0 | 0 | 0 |
| KME Kent Medway East | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|----------------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| | SWS_KME_HI-GRW_ALL_ALL_nw_gwa_win_east n Recommission Gravesend source | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | -- | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KME Kent Medway East | SWS_KME_HI-DES_ALL_ALL_ios20 Isle of Sheppey Desalination Plant 20MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | - | 0 | - | --- | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | - | -- | 0 | - | 0 | 0 | 0 | - | 0 | 0 |
| KME Kent Medway East | SWS_KME_HI-DES_ALL_ALL_ios20_p2 Isle of Sheppey Desalination Plant 20MI/d Phase 2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | - | 0 | - | --- | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | - | -- | 0 | - | 0 | 0 | 0 | - | 0 | 0 |
| KME Kent Medway East | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | 0 | - | - | 0 | - | --- | 0 | - | - | - | - | - | - | - |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-----|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | SWS_KME_HI-DES_ALL_ALL_ios10 Isle of Sheppey Desalination Plant 10M/d | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | - | 0 | - | - | 0 | - | 0 | 0 | 0 | - | 0 |

Kent Medway East (KME) Commentary:

Construction Effects

Significant negative effects are identified in respect of:

- SWS_KME_HI-DES_ALL_ALL_ios20 Isle of Sheppey Desalination Plant 20MI/d [Carbon emissions]
- SWS_KME_HI-DES_ALL_ALL_ios20_p2 [Carbon emissions]
- SWS_KME_HI-DES_ALL_ALL_ios10 Isle of Sheppey Desalination Plant 10MI/d [Carbon emissions]

Moderate negative effects are identified in respect of:

- SWS_KME_HI-REU_RE1_ALL_sit8 [Water quality]

Operation Effects

A significant negative effect is identified in respect of:

- WS_KME_RE-OTH_ALL_ALL_neub-kme [Health & Well-being]

A moderate positive effect is identified in respect of:

- SWS_KTZ_HI-TFR_KME_ALL_sel3 [Water reliability]

Moderate negative effects are identified in respect of:

- WS_KME_RE-OTH_ALL_ALL_neub-kme [Tourism & recreation]
- SWS_KME_RE-OTH_ALL_ALL_tub-kme (Health & well-being)
- SWS_KME_HI-REU_RE1_ALL_sit8 [Biodiversity, Water quality]
- SWS_KME_HI-GRW_ALL_ALL_nw_gwa_win_eastrn [Water quality]
- SWS_KME_HI-DES_ALL_ALL_ios20 Isle of Sheppey Desalination Plant 20MI/d [Water quality, Carbon emissions]
- SWS_KME_HI-DES_ALL_ALL_ios20_p2 Isle of Sheppey Desalination Plant 20MI/d Phase 2 [Water quality, Carbon emissions]
- SWS_KME_HI-DES_ALL_ALL_ios10 Isle of Sheppey Desalination Plant 10MI/d [Water quality, Carbon emissions]

| | | | | | | | | | | | | | | | | |
|----------------------------|---------------------------------|-------------------------|----|---|---|----|---|---|----|----|---|---|---|---|----|---|
| KMW Kent Medway West | SWS_KMW_HI-DES_ALL_ALL_swa10 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | - | -- | 0 | - | - | 0 | - | 0 | 0 | 0 | - | 0 |
| KMW Kent Medway West | SWS_KMW_HI-DES_ALL_ALL_swa10_p2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | - | - | - | - | 0 | - | - | 0 | - | - | - | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (negative) | -- | 0 | - | -- | 0 | - | -- | 0 | - | 0 | 0 | 0 | -- | 0 |
| KMW | SWS_KMW_HI-DES_ALL_ALL_swa20 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------|-------------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| Kent Medway West | | Construction (negative) | - | - | - | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | - | -- | 0 | - | - | 0 | - | 0 | 0 | 0 | - | 0 |
| KMW Kent Medway West | SWS_KMW_HI-DES_ALL_ALL_swa20_p2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | - | -- | 0 | - | -- | 0 | - | 0 | 0 | 0 | -- | 0 |
| KMW Kent Medway West | SWS_KMW_RE-OTH_ALL_ALL_neub-kmw | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 | 0 |
| KMW Kent Medway West | SWS_KMW_RE-OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------|--------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |
| KMW Kent Medway West | SWS_KMW_RE-OTH_ALL_ALL_tub-kmw | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | -- | - | 0 | 0 |
| KMW Kent Medway West | SWS_KMW_RE-DRO_ALL_ALL_si_bew2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | +++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | - | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 |
| KMW Kent Medway West | SWS_KMW_HI-REU_REI_ALL_ecc18 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | -- | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|----------------------------|-----------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | 0 | 0 | 0 | -- | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KMW Kent Medway West | SWS_KMW_HI-RSR_REI_ALL_rab1 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | -- | -- | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | -- | 0 | 0 | 0 | - | 0 | - | 0 | 0 | 0 | 0 |
| | | | | | | | | | | | | | | | | |

Kent Medway West (KMW) Commentary:

Construction Effects

Moderate negative effects are identified in respect of:

- SWS_KMW_HI-REU_RE1_ALL_ecc18 [Water quality]
- SWS_KMW_HI-RSR_RE1_ALL_rab1 {Water resilience, Water quality}
- SWS_KMW_HI-DES_ALL_ALL_swa10 [biodiversity, Water quality]

Operation Effects

A significant negative effect is identified in respect of:

- SWS_KMW_RE-OTH_ALL_ALL_neub-kmw [Health & well-being]

A significant positive effect is identified in respect of:

- SWS_KMW_RE-DRO_ALL_ALL_si_bew2 [Water reliability]

Moderate positive effects are identified in respect of :

- SWS_KMW_HI-DES_ALL_ALL_swa10 [Climate change]
- SWS_KMW_HI-DES_ALL_ALL_swa10_p2 [Climate change]
- SWS_KMW_HI-DES_ALL_ALL_swa20 [Climate change]
- SWS_KMW_HI-DES_ALL_ALL_swa20_p2 [Climate change]

Moderate negative effects are identified in respect io:

- SWS_KMW_RE-OTH_ALL_ALL_neub-kmw [Tourism & recreation]
- SWS_KMW_RE-OTH_ALL_ALL_tub-kmw [Health & well-being]
- SWS_KMW_HI-REU_RE1_ALL_ecc18 [Water quality]
- SWS_KMW_HI-RSR_RE1_ALL_rab1 [Water quality]
- SWS_KMW_HI-DES_ALL_ALL_swa20 [Biodiversity, Water quality]
- SWS_KMW_HI-DES_ALL_ALL_swa20_p2 [Biodiversity, Water quality, carbon emissions, resource use]
- SWS_KMW_HI-DES_ALL_ALL_swa10_p2 [Biodiversity, Water quality, carbon emissions, resource use]

| | | | | | | | | | | | | | | | | | |
|--------------------|-------------------------------------|-------------------------|----|---|---|---|---|---|----|---|---|---|---|---|----|---|---|
| KTZ Kent Thanet | SWS_KTZ_HI- DES_ALL_ALL_tha10_p2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | -- | - | - | - | 0 | - | -- | 0 | - | - | - | 0 | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | 0 | 0 | 0 | 0 | -- | 0 | 0 | 0 | 0 | 0 | -- | 0 | 0 |
| KTZ Kent Thanet | SWS_KTZ_HI-DES_ALL_ALL_tha20 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | -- | - | - | - | 0 | - | -- | 0 | - | - | - | 0 | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|--------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | -- | 0 | 0 | 0 | 0 | 0 | -- | 0 | 0 | 0 | 0 | 0 | - | 0 |
| KTZ Kent Thanet | SWS_KTZ_HI- DES_ALL_ALL_tha20_p2 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | -- | - | - | - | 0 | - | -- | 0 | - | - | - | 0 | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | -- | 0 | 0 | 0 | 0 | 0 | 0 | -- | 0 | 0 | 0 | 0 | -- | 0 |
| KTZ Kent Thanet | SWS_KTZ_RE-OTH_ALL_ALL_neub- kt | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | -- | 0 | 0 |
| KTZ Kent Thanet | SWS_KTZ_RE- OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|--------------------|-------------------------------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| KTZ Kent Thanet | SWS_KTZ_RE-OTH_ALL_ALL_tub-kt | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | - | - | 0 | 0 | 0 |
| KTZ Kent Thanet | SWS_KTZ_HI-TFR_RZ8_ALL_win | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | -- | - | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KTZ Kent Thanet | SWS_KTZ_HI-TFR_KME_ALL_sfl | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | SWS_KTZ_HI-TFR_KME_ALL_sel3 | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|--------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| KTZ Kent Thanet | | Construction (negative) | - | - | 0 | 0 | 0 | - | - | 0 | - | - | - | - | - | - | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | - | 0 | 0 | 0 | 0 | 0 | - | 0 | - | 0 | 0 | 0 | 0 | 0 |
| KTZ Kent Thanet | Canterbury (Broad Oak) to Near Canterbury: 20MI/d | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KTZ Kent Thanet | SWS_KTZ_HI-TFR_AZ7_ALL_win | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | -- | 0 | - | 0 | 0 | - | - | 0 | - | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---|--------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| <p>Kent Thanet (KTZ) Commentary:</p> <p>Construction Effects Moderate negative effects are identified in respect of:</p> <ul style="list-style-type: none"> SWS_KTZ_HI-DES_ALL_ALL_tha10_p2 [Biodiversity, Carbon emissions] SWS_KTZ_HI-DES_ALL_ALL_tha20 [Biodiversity, Carbon emissions] SWS_KTZ_HI-DES_ALL_ALL_tha20_p2 [Biodiversity, Carbon emissions] SWS_KTZ_HI-TFR_AZ7_ALL_win [Biodiversity] WS_KTZ_HI-TFR_RZ8_ALL_win [Biodiversity] <p>Operation Effects A significant negative effect is identified in respect of:</p> <ul style="list-style-type: none"> SWS_KTZ_RE-OTH_ALL_ALL_neub-kt [Health& well-being] <p>A moderate positive effect is identified in respect of:</p> <ul style="list-style-type: none"> SWS_KTZ_HI-TFR_KME_ALL_sel3 (Water reliability) <p>Moderate negative effects are identified in respect of:</p> <ul style="list-style-type: none"> SWS_KTZ_HI-DES_ALL_ALL_tha10_p2 [Biodiversity, Carbon emissions, Resource use] SWS_KTZ_HI-DES_ALL_ALL_tha20 [Biodiversity, Carbon emissions] SWS_KTZ_HI-DES_ALL_ALL_tha20p2 [Biodiversity, Carbon emissions, Resource use] SWS_KTZ_RE-OTH_ALL_ALL_neub-kt [Tourism & recreation] SWS_KTZ_RE-OTH_ALL_ALL_tub-kt [Health & well-being] | | | | | | | | | | | | | | | | |
| | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---------------------------|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| SHZ Sussex Hastings | SWS_SHZ_HI-GRW_ALL_ALL_ass_br_bre_eastn | Construction (negative) | 0 | 0 | 0 | - | 0 | - | - | 0 | - | 0 | - | 0 | - | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | - | 0 | 0 | - | - | 0 | 0 | 0 | 0 | 0 | 0 |
| SHZ Sussex Hastings | SWS_SHZ_RE-DRO_ALL_ALL_si_dar2 Darwell Reservoir (stages 1 (freshet removal) to 3) Drought Permit/Order (2025 onwards) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | ++ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | - | 0 | 0 | -- | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 |
| SHZ Sussex Hastings | SWS_SHZ_HI-REU_RE1_ALL_dar10 Hastings WTW in Darwell Reservoir (10MI/d) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | 0 | - | - | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | - | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| SHZ Sussex Hastings | SWS_SHZ_RE-OTH_ALL_ALL_neub-sh | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|---------------------------|--|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | --- | - | 0 |
| SHZ Sussex Hastings | SWS_SHZ_RE- OTH_REP_ALL_bs_kmt_resil | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | 0 | + | 0 | 0 | + | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 |
| SHZ Sussex Hastings | SWS_SHZ_RE-OTH_ALL_ALL_tub-sh | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | + | 0 | 0 | + | + | 0 | + | + | + | + | + | 0 | + | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | - | -- | - | 0 |
| SHZ Sussex Hastings | SWS_SHZ_HI- REU_REI_ALL_env_cu_bewI_conju | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | - | - | - | -- | 0 | - | - | 0 | - | - | - | - | - | - |
| | | Operation (positive) | 0 | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-----|--------|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | | Operation (negative) | 0 | 0 | - | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Sussex Hastings (SHZ) Commentary:

Construction Effects

Moderate negative effects are identified in respect of:

- SWS_SHZ_HI-REU_RE1_ALL_env_cu_bew1_conju [Water quality]
- SWS_SHZ_RE-DRO_ALL_ALL_si_dar2 Darwell Reservoir (stages 1 (freshet removal) to 3) Drought Permit/Order (2025 onwards) [Water quality]

Operation Effects

A significant negative effect is identified in respect of:

- SWS_SHZ_RE-OTH_ALL_ALL_neub-sh [health & well-being]

A moderate positive effect is identified in respect of:

- SWS_SHZ_RE-DRO_ALL_ALL_si_dar2 Darwell Reservoir (stages 1 (freshet removal) to 3) Drought Permit/Order (2025 onwards) [Water reliability]

Moderate negative effects are identified in respect of:

- SWS_SHZ_RE-OTH_ALL_ALL_tub-sh [health & well-being]
- SWS_SHZ_RE-OTH_ALL_ALL_neub-sh [tourism & recreation]

5.4. Assessment of the Effects of the Preferred Demand Management Options

Demand management is a key component of SWS's long-term water resources management strategy and will deliver significant benefits in all three supply areas (in terms of water resources, resilience and minimising the need for (and effects from) new supply options). SWS established a target of reducing average per capita consumption (PCC) across the operational area to 100l/h/d as part of the Target 100 (T100) commitment in WRMP19 which was reflected in the demand management option assessment in the SEA of SWS's WRMP19.

Revised household demand forecasts taking into account recent changes such as COVID_19, regulator feedback and further customer engagement has led to a refinement of the demand management options considered in WRMP19. SWS has identified seven 'catalysts' that are planned workstreams that will bring about a change in behaviour and practices among household customers, non-household customers and developers. These are summarised below.

1. **Communication and marketing:** SWS will use a sustained and multi-pronged awareness campaign to highlight the financial, social and environmental benefits of using less water. SWS will use this campaign to:
 - a. Build awareness around water scarcity in the South East and the need to use water wisely
 - b. Establish a water efficient culture as the norm
 - c. Celebrate and encourage behaviour change.
2. **Deploy smart meters:** SWS are currently trialling 1,500 smart meters. Smart meters can record and transmit consumption data in near real-time and the information can facilitate proactive engagement with customers and help identify and fix supply-pipe leaks and plumbing losses earlier than Visual Meter Reads (VMR) and Automated Meter Reads (AMR) meters. Following completion of the trial, SWS plan to fully replace current VMRs and AMRs with smart meters by 2030.
3. **Tariffs:** SWS will use data from smart meters to trial different tariff structures, and use information from these trials to build awareness and readiness before introducing differential tariffs over time to delivery water savings.
4. **Water-saving solutions:** SWS intend to use smart meter data to optimise the use of water-saving devices or advice.
5. **Home audits:** SWS plan to carry out 10,000 home audits per year from 2025–26 to help customers reduce demand, using smart meter data and behavioural science approaches.
6. **Education:** SWS are commissioning classroom resources from curriculum specialists on water-saving and living efficiently for primary and secondary schools to embed water-efficient behaviour in our future customers – both at home and at work.
7. **Policy and regulation:** We are working with government policymakers, regulators, other water companies and wider stakeholders across the UK to develop and implement policies that promote water efficiency across all sectors.

These are then reflected in the following seven demand management options (to be applied across all resource zones) which have been assessed to identify potential significant effects:

- SWS_[RZ]_T100_Marketing_Comms - Marketing and comms campaign (All resource zones);
- SWS_T100 Smart Metering (all) - Roll out of smart metering (All resource zones);
- SWS_T100 Tariffs (all) - Roll out of smart tariffs across the company (All resource zones);
- SWS_T100 Products and innovation (all) - Supply of water efficiency products and services (All resource zones);
- SWS_[RZ]_T100_Water Audit - Water Audit Programme (All Resource Zones);
- SWS_[RZ]_T100_Education - Education campaign (All resource zones);

- SWS_[RZ]_T100_Policy_Regulation - Implementation of changes to regulation and policy on building standards and appliances (All resource zones).

Table 5-3 presents the summary results of the assessment with the full assessment for each option set out in **Appendix G**.

No significant effects, either positive or negative, have been identified, although a range of moderate and minor effects are present, relating to: water supply (reliability), climate factors (carbon emissions, climate change), population and human health (health and well-being), material assets (resource use and built assets), air quality and the historic environment.

Table 5-3 Demand Management Options: Visual evaluation matrix summary (post mitigation)

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|-----|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| All | SWS_[RZ]_T100_Policy_Regulation Implementation of changes to regulation and policy on building standards and appliances (All resource zones) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All | SWS_[RZ]_T100_Water Audit Water Audit Programme (All Resource Zones) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 | 0 | 0 | 0 | - | 0 | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| All | SWS_[RZ]_T100_Marketing_Co mms Marketing and comms campaign (All resource zones) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | 0 | ++ | 0 | 0 | 0 | |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | |
| All | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | | |
|-----|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|---|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets | |
| | SWS_[RZ]_T100_Education Education campaign (All resource zones) | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | - | 0 | 0 |
| All | SWS_T100 Tariffs (all) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Roll out of smart tariffs across the company (All resource zones) | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All | SWS_T100 Products and innovation (all) | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | - | - | 0 |
| | Supply of water efficiency products and services (All resource zones) | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | + | + | 0 | 0 | 0 | 0 |
| | | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| All | | Construction (positive) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 |
| | | Construction (negative) | 0 | 0 | 0 | 0 | 0 | 0 | - | - | 0 | 0 | 0 | 0 | - | - | 0 |

| WRZ | Option | Stages (post mitigation) | Biodiversity | Soils, Geodiversity, Land Use | Water | | | Air | Climatic Factors | | Landscape | Historic Environment | Population & Human Health | | Material Assets | |
|-----|---|--------------------------|--------------|-------------------------------|------------|---------|-------------|-----|------------------|----------------|-----------|----------------------|---------------------------|----------------------|-----------------|--------------|
| | | | | | Resilience | Quality | Reliability | | Carbon emissions | Climate change | | | Health & well-being | Tourism & recreation | Resource use | Built assets |
| | SWS_T100 Smart Metering (all) | Operation (positive) | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | 0 | + | 0 | 0 | 0 |
| | Roll out of smart metering (All resource zones) | Operation (negative) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

5.5. Summary of Significant Effects by Water Resource Zone (WRZ)

Significant effects have been recorded (Table 5-4) from options proposed for the following WRZs:

- Sussex Brighton (SBZ)
- Hampshire Southampton East (HSE)
- Hampshire Southampton West (HSW)
- Kent Medway East (KME)
- Kent Medway West (KMW)
- Kent Thanet (KTZ)
- Sussex Hastings (SHZ)
- Hampshire Andover (HAZ)
- Hampshire Rural (HRZ)
- Isle of Wight (IOW)
- Sussex North (SNZ)
- Sussex Worthing (SWZ)
- Hampshire Winchester (HWZ)
- Hampshire Near Basingstoke (HKZ)

Significant positive effects which have been identified that relate to the operation phase and the delivery of **reliable water supplies**, associated with Kent Medway West, Hampshire Southampton East and Hampshire Southampton West WRZs as follows:

- SWS_KMW_RE-DRO_ALL_ALL_si_bew2
- SWS_HSW_HI-ROC_WT1_ALL_cpy_tst_60
- SWS_HSE_HI-TFR_T2S_CNO_spar to ott 120 pot

In respect of significant negative effects, three relate to **biodiversity**, all in the operation phase, relating to the Hampshire Southampton East WRZ:

- SWS_HSE_RE-DRO_ALL_ALL_si_can2
- SWS_HSE_RE-DRO_ALL_ALL_si_ott2
- SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi

Four significant negative effects are identified in respect of climatic factors (reduce **embodied and operational carbon emissions**) in respect of the construction phase relating to the Kent Medway East WRZ and operation phase in Sussex Brighton WRZ:

- SWS_KME_HI-DES_ALL_ALL_ios10
- SWS_KME_HI-DES_ALL_ALL_ios20 Isle of Sheppey Desalination Plant 20MI/d
- SWS_KME_HI-DES_ALL_ALL_ios20_p2
- SWS_SBZ_HI-DES_ALL_ALL_shom40

There is one significant negative effect identified in respect of **Landscape** (construction) in Sussex North WRZ:

- SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm

There are fourteen significant negative effects relating to non-essential use bans in respect of **health and well-being** in the operation phase in relation to the following options

- SWS_SNZ_RE-OTH_ALL_ALL_neub-sn
- SWS_SWZ_RE-OTH_ALL_ALL_neub-sw
- SWS_SBZ_RE-OTH_ALL_ALL_neub-sb
- SWS_SHZ_RE-OTH_ALL_ALL_neub-sh
- SWS_HSE_RE-OTH_ALL_ALL_neub-hse
- SWS_KME_RE-OTH_ALL_ALL_neub-kme
- SWS_KTZ_RE-OTH_ALL_ALL_neub-kt
- SWS_IOW_RE-OTH_ALL_ALL_neub-iw
- SWS_HAZ_RE-OTH_ALL_ALL_neub-ha
- SWS_HKZ_RE-OTH_ALL_ALL_neub-hk
- SWS_HRZ_RE-OTH_ALL_ALL_neub-hr
- SWS_HWZ_RE-OTH_ALL_ALL_neub-hw
- SWS_HSW_RE-OTH_ALL_ALL_neub-hsw
- SWS_KMW_RE-OTH_ALL_ALL_neub-kmw

Where residual significant negative effects have been identified, additional mitigation measures to those identified might have to be explored in order to try and reduce the scale and/or impacts of these effects, or alternative options explored.

Table 5-4 Summary of Post Mitigation Significant Effects by Water Resource Zone Options

| WRZ | Option | Description | Phase | SEA Topic | Commentary | Mitigation | Post-Mitigation Significant Effect |
|-----------------------|--|---|--------------|--|--|------------|------------------------------------|
| Sussex North (SNZ) | SWS_SNZ_RE-OTH_ALL_ALL_n eub-sn NEUBs - SNZ | Non-essential use ban - SNZ WRZ SEA Topic | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | N/A | Significant negative |
| Sussex North (SNZ) | SWS_SNZ_HI-ROC_RE1_ALL_h sb-rcm | Groundwater: Petworth WSW return to service with a new borehole (4.0Ml/d) | Construction | Landscape: Conserve, protect and enhance landscape, townscape and seascape character and visual amenity | Petworth WSW - return WSW to service with a new borehole. The option is to drill a new replacement borehole for Petworth WSW in Sussex North Area. Borehole to be minimum c. 300mm dia ID, and c. 80m depth. | N/A | Significant negative |
| Sussex Worthing (SWZ) | SWS_SWZ_RE-OTH_ALL_ALL_n eub-sw NEUBs – SWZ | Non-essential use ban - SWZ WRZ | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | N/A | Significant negative |
| Sussex Brighton (SBZ) | SWS_SNZ_RE-OTH_ALL_ALL_n eub-sn NEUBs - SBZ | Non-essential use ban - SBZ WRZ | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations | N/A | Significant negative |

| WRZ | Option | Description | Phase | SEA Topic | Commentary | Mitigation | Post-Mitigation Significant Effect |
|-----------------------|---|---|--------------|--|---|---|------------------------------------|
| Sussex Brighton (SBZ) | SWS_SBZ_HI-DES_ALL_ALL_shom40 | Desalination: Sussex Coast (Modular 10-20Ml/d) (40Ml/d) | Operation | social wellbeing Climate Change: Carbon emissions | have to be suspended. A site in Shoreham Harbour was identified as a the most feasible location for a coastal desalination plant that could supply the Central Area WRZs. The new desalination plant would be constructed within the site of an existing power station and make use of its abstraction and discharge structures. The treated water would be supplied to the Sussex WRZ distribution network. | N/A | Significant negative |
| KME Kent Medway East | SWS_KME_RE-OTH_ALL_ALL_neub-kme | Non-essential use ban - SWZ WRZ | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | N/A | Significant negative |
| KME Kent Medway East | SWS_KME_HI-DES_ALL_ALL_ios10 Isle of Sheppey Desalination Plant 10Ml/d | Isle of Sheppey Desalination Plant 10Ml/d | Construction | Climatic Factors: Reduce embodied and operational carbon emissions | Carbon will be generated from materials used to construct the new infrastructure (embodied carbon), construction activities and from operation. The relative carbon scale identified that the option has major construction and moderate operation carbon emissions (relative to other WRSE Regional Plan options). | Investigate use of renewables during construction and operation for energy supply and use of materials with lower embodied carbon. Carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. | Significant Negative |
| KME Kent Medway East | SWS_KME_HI-DES_ALL_ALL_ios20 | Isle of Sheppey Desalination Plant 20Ml/d | Construction | Climatic Factors: Reduce embodied and operational | Carbon will be generated from materials used to construct the new infrastructure (embodied | Investigate use of renewables during construction and operation | Significant Negative |

| WRZ | Option | Description | Phase | SEA Topic | Commentary | Mitigation | Post-Mitigation Significant Effect |
|----------------------|--|--|--------------|--|---|---|------------------------------------|
| | Isle of Sheppey Desalination Plant 20MI/d | | | carbon emissions | carbon), construction activities and from operation. The relative carbon scale identified that the option has major construction and moderate operation carbon emissions (relative to other WRSE Regional Plan options). | for energy supply and use of materials with lower embodied carbon. Carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. | |
| KME Kent Medway East | SWS_KME_HI-DES_ALL_ALL_ios20_p2 Isle of Sheppey Desalination Plant 20MI/d | Isle of Sheppey Desalination Plant 20MI/d Phase 2 | Construction | Climatic Factors: Reduce embodied and operational carbon emissions | Carbon will be generated from materials used to construct the new infrastructure (embodied carbon), construction activities and from operation. The relative carbon scale identified that the option has major construction and moderate operation carbon emissions (relative to other WRSE Regional Plan options). | Investigate use of renewables during construction and operation for energy supply and use of materials with lower embodied carbon. Carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. | Significant Negative |
| KMW Kent Medway West | SWS_KMW_RE-OTH_ALL_ALL_neub-kmw | Non-essential use ban - SWZ WRZ | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | N/A | Significant Negative |
| KMW Kent Medway West | SWS_KMW_RE-DRO_ALL_ALL_sibew2 | Bowl Water / River Medway Scheme (stages 1 to 4) Drought Permit/Order (2025 onwards) | Operation | Water: Deliver reliable and resilient water supplies | Option will increase storage of water during drought conditions with an assumed drought action duration. | N/A | Significant Positive |
| KTZ Kent Thanet | SWS_KTZ_RE-OTH_ALL_ALL_neub-kt | Non-essential use ban - SWZ WRZ | Operation | Population and Human Health: Maintain and | The ban carries the risk of economic impacts on businesses that benefit directly | N/A | Significant negative |

| WRZ | Option | Description | Phase | SEA Topic | Commentary | Mitigation | Post-Mitigation Significant Effect |
|---|--|---|-----------|--|--|------------|------------------------------------|
| | | | | enhance the health and wellbeing of the local community, including economic and social wellbeing | or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | | |
| SWZ Sussex Worthing SHZ Sussex Hastings HAZ Hants Andover HKZ Hants Near Basingstoke HRZ Hants Rural IOW Isle of Wight HWZ Hants Winchester | SWS_SWZ_RE-OTH_ALL_ALL_neub-sw SWS_SHZ_RE-OTH_ALL_ALL_neub-sh SWS_HAZ_RE-OTH_ALL_ALL_neub-ha SWS_HKZ_RE-OTH_ALL_ALL_neub-hk SWS_HRZ_RE-OTH_ALL_ALL_neub-hr SWS_IOW_RE-OTH_ALL_ALL_neub-iw SWS_HWZ_RE-OTH_ALL_ALL_neub-hw | Non-essential use ban – SWZ-WRZ, SHZ WRZ, HAZ WRZ, HKZ WRZ, HRZ WRZ, IOW WRZ, HWZ WRZ | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | N/A | Significant negative |
| Hants Southampton East (HSE) | SWS_HSE_HI-TFR_T2S_CNO_s par to ott 120 pot | Sparsholt to Otterbourne (120) Potable – Construction | Operation | Water reliability: Deliver reliable and resilient water supplies | Option will facilitate water supply once operational, through an additional bulk transfer of potable water from Sparsholt to Otterbourne distribution network. The option is likely to increase water supplies significantly with 120ML/d. | N/A | Significant positive |

| WRZ | Option | Description | Phase | SEA Topic | Commentary | Mitigation | Post-Mitigation Significant Effect |
|------------------------------|--------------------------------|--|-----------|--|--|---|------------------------------------|
| Hants Southampton East (HSE) | SWS_HSE_RE-DRO_ALL_ALL_si_can2 | To allow up to 27MI/d and 3750MI/year (average of 20.8MI/d over 6 months) to be abstracted from the Preston Candover boreholes. Abstraction would be increased over a period of several days up to the full required discharge rate so as to prevent a sudden increase in flow in the River Itchen. Abstraction and discharges will only be permitted when flows in the River Itchen at Allbrook and Highbridge are at or below a trigger flow of 220MI/d. 2MI/d environmental support (within the limits above) at the existing discharge to the Candover Stream. Operated during, and potentially after, discharges to the River Itchen. | Operation | Biodiversity: Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | HRA Appropriate Assessment (2022) for the Candover Augmentation Scheme Drought Order, concluded that an adverse effect on the site integrity of the River Itchen SAC due to implementation of this option could not be ruled out. This conclusion, and the consequent need to provide compensation measures under the Habitats Directive, is therefore reflected in the assignment of a major adverse residual effect for this option. | A programme of mitigation and monitoring has been agreed with the Environment Agency and Natural England for the Drought Order as part of the Section 20 Agreement. Potential mitigation measures to improve the resilience of habitats and species include temporary reduction or cessation of the terms of the drought order; fish distress monitoring and response plan; and protection of 'spate flows' following periods of heavy rain. | Significant negative |
| Hants Southampton East (HSE) | SWS_HSE_RE-DRO_ALL_ALL_si_ott2 | Drought order pertaining to the sources collectively known as the Lower Itchen sources. These include Itchen groundwater (including Twyford Moors) and surface water abstraction, Twyford groundwater abstraction and Portsmouth Water's Import from Portsmouth Water surface water abstraction on the Lower Itchen. The Lower Itchen drought order would enable Southern Water to increase abstraction from | Operation | Biodiversity: Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | HRA Appropriate Assessment (2022) for the Lower Itchen Drought Order, concluded that an adverse effect on the site integrity of the River Itchen SAC due to implementation of this option. This conclusion, and the consequent need to provide compensation measures under the Habitats Directive, is therefore reflected in the assignment of a major adverse residual effect for this option. | Monitor groundwater and river levels and implement measures to reduce impacts on ecology, however residual effects likely to remain during operation. A programme of mitigation and monitoring has been agreed with the Environment Agency and Natural England for the Drought Order as part of the Section 20 Agreement. A Lower Itchen Drought Order Mitigation Package has been prepared consisting of a package of in-river restoration and | Significant negative |

| WRZ | Option | Description | Phase | SEA Topic | Commentary | Mitigation | Post-Mitigation Significant Effect |
|------------------------------|---|---|-----------|--|---|---|------------------------------------|
| | | the River Itchen at these sources. | | | | mitigation measures for the Itchen. | |
| Hants Southampton East (HSE) | SWS_HSE_RE-DRO_ALL_ALL_d o_si_lis_westi | Drought Order to reduce the proposed abstraction licence 'hands off' flow condition from 198MI/d to 160MI/d, as measured at Allbrook and Higbridge gauging station and Drought Order to reduce the 'hands off' flow condition from 194MI/d to 150MI/d, as measured at Portsmouth Water's Lower Itchen abstraction licence gauging station | Operation | Biodiversity: Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | HRA Appropriate Assessment (2022) for the Lower Itchen Drought Order, concluded that an adverse effect on the site integrity of the River Itchen SAC due to implementation of this option. This conclusion, and the consequent need to provide compensation measures under the Habitats Directive, is therefore reflected in the assignment of a major adverse residual effect for this option. | Monitor groundwater and river levels and implement measures to reduce impacts on ecology, however residual effects likely to remain during operation. A programme of mitigation and monitoring has been agreed with the Environment Agency and Natural England for the Drought Order as part of the Section 20 Agreement. A Lower Itchen Drought Order Mitigation Package has been prepared consisting of a package of in-river restoration and mitigation measures for the Itchen. | Significant negative |
| Hants Southampton East (HSE) | SWS_HSE_RE-OTH_ALL_ALL_n eub-hse | Non-essential use ban - HSE WRZ | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | N/A | Significant negative |

| WRZ | Option | Description | Phase | SEA Topic | Commentary | Mitigation | Post-Mitigation Significant Effect |
|------------------------------|------------------------------------|---|-----------|--|--|------------|------------------------------------|
| Hants Southampton West (HSW) | SWS_HSW_RE-OTH_ALL_ALL_n eub-hsw | Non-essential use ban - HSW WRZ | Operation | Population and Human Health: Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing | The ban carries the risk of economic impacts on businesses that benefit directly or indirectly from certain water uses that would be prohibited under the ban (e.g. sports and leisure facilities). The ban may result in some business loss if the water-related operations have to be suspended. | N/A | Significant negative |
| Hants Southampton West (HSW) | SWS_HSW_HI-ROC_WT1_ALL_c py_tst_60 | Treatment capacity: Upgrade Test Surface Water WSW: 60MI/d treatment train of surface water, possible augmented with Recycled Water. This would be a separate process stream from the existing raw water feed through to delivery to the network. | Operation | Water reliability: Deliver reliable and resilient water supplies | Upgrading the treatment capacity will increase water resilience and maintain/improve water supplies. Option proposed to increase water supply by 60MI/d. | N/A | Significant positive |

6. Summary of Likely Significant Effects

6.1. Summary of Likely Significant Effects by WRZ

The following Likely Significant Effects have been identified:

Significant negative effects relate to human health & well-being in the operation phase (SWZ, SBZ, KME, KMW, KTZ, SHZ, HAZ, HKZ, HRZ and IOW) and biodiversity (KME) and climatic factors [carbon emissions] in the construction phase (KME) and biodiversity (KTZ).

Significant positive effects relate to reliable water supplies in the operation phase, in respect of schemes within SBZ and KMW.

6.2. Summary Effects by SEA and WRMP24 Topics and Objectives

Tables 6-1 summarises, by SEA Topics, the likely significant effects identified by WRZ.

Table 6-1 Significant Effects Identified by SEA Topic and Objective

| SEA Topic | SEA Objective | Significant Effects Identified |
|-------------------------------|--|---|
| Biodiversity, flora and fauna | Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_HSE_RE-DRO_ALL_ALL_si_can2 ■ SWS_HSE_RE-DRO_ALL_ALL_si_ott2 ■ SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi |
| Soil | Protect and enhance the functionality, quantity and quality of soils | No significant effects have been identified. |
| Air | Reduce and minimise air emissions | No significant effects have been identified. |
| Water | Increase resilience and reduce flood risk | No significant effects have been identified. |
| | Protect and enhance the quality of the water environment and water resources | No significant effects have been identified. |
| | Deliver reliable and resilient water supplies | Significant positive effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_KMW_RE-DRO_ALL_ALL_si_bew2 ■ SWS_HSW_HI-ROC_WT1_ALL_cpy_tst_60 ■ SWS_HSE_HI-TFR_T2S_CNO_spar to ott 120 pot |
| Climatic Factors | Reduce embodied and operational carbon emissions | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_KME_HI-DES_ALL_ALL_ios10 ■ SWS_KME_HI-DES_ALL_ALL_ios20 Isle of Sheppey Desalination Plant 20MI/d ■ SWS_KME_HI-DES_ALL_ALL_ios20_p2 ■ SWS_SBZ_HI-DES_ALL_ALL_shom40 |
| | Reduce vulnerability to climate change risks and hazards | No significant effects have been identified. |

| SEA Topic | SEA Objective | Significant Effects Identified |
|-----------------------------|--|---|
| Landscape | Conserve, protect and enhance landscape, townscape and seascape character and visual amenity | Significant negative effects are identified in respect of option: <ul style="list-style-type: none"> ■ SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm |
| Historic Environment | Conserve, protect and enhance the historic environment, including archaeology | No significant effects have been identified. |
| Population and Human Health | Maintain and enhance the health and wellbeing of the local community | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_SNZ_RE-OTH_ALL_ALL_neub-sn ■ SWS_SWZ_RE-OTH_ALL_ALL_neub-sw ■ SWS_SBZ_RE-OTH_ALL_ALL_neub-sb ■ SWS_SHZ_RE-OTH_ALL_ALL_neub-sh ■ SWS_HSE_RE-OTH_ALL_ALL_neub-hse ■ SWS_KME_RE-OTH_ALL_ALL_neub-kme ■ SWS_KTZ_RE-OTH_ALL_ALL_neub-kt ■ SWS_IOW_RE-OTH_ALL_ALL_neub-iw ■ SWS_HAZ_RE-OTH_ALL_ALL_neub-ha ■ SWS_HKZ_RE-OTH_ALL_ALL_neub-hk ■ SWS_HRZ_RE-OTH_ALL_ALL_neub-hr ■ SWS_HWZ_RE-OTH_ALL_ALL_neub-hw ■ SWS_HSW_RE-OTH_ALL_ALL_neub-hsw ■ SWS_KMW_RE-OTH_ALL_ALL_neub-kmw |
| | Maintain and enhance tourism and recreation | No significant effects have been identified. |
| Material Assets | Minimise resource use and waste production | No significant effects have been identified. |
| | Avoid negative effects on built assets and infrastructure | No significant effects have been identified. |

7. Cumulative Effects Assessment

7.1. Introduction

The cumulative assessments presented in this section have been carried out in line with the methodology described in Section 4 of this Report.

7.2. Cumulative Effects of WRMP24 Options

Table 7-1 sets out definitions of the potential cumulative impacts associated with WRMP24 options.

Table 7-1 Cumulative impacts associated with WRMP24 options

| | |
|-----------------------------|---|
| Cumulative positive effects | Cumulative positive effects identified in relation to the management of water resources across the WRMP24 area. |
| Cumulative negative effects | Cumulative negative effects anticipated in relation to impacts on population and livelihoods, plus certain recreation, landscape and heritage features as a result of the implementation of WRMP24. |
| No cumulative effects | No cumulative effects identified in relation to the implementation of WRMP24. |

Table 7-2 sets out the likely cumulative effects associated with the WRZ options by SEA Topic and Objective.

Table 7.2: Cumulative Effects Assessment. Pre- and Post-Mitigation

| SEA Topic | SEA Objective | Construction Effects | Operation Effects | Comments | Mitigation | Construction Effects | Operation Effects |
|-------------------------------|--|----------------------|-------------------|---|---|----------------------|-------------------|
| Biodiversity, flora and fauna | Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | | | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_HSE_RE-DRO_ALL_ALL_si_can2 ■ SWS_HSE_RE-DRO_ALL_ALL_si_ott2 ■ SWS_HSE_RE-DRO_ALL_ALL_do_si_lis_westi | Best practice methods to be implemented to minimise disturbance effects and habitat loss. Habitat to be reinstated on completion, or if unavoidable compensatory habitat to be considered to replace damaged or lost habitat. Future design will need to undertake ecology surveys. HRA Appropriate Assessment will be required for a number of the options. The potential for cumulative effects will need to be reviewed as part of the HRA Appropriate Assessment. | | |
| Soil | Protect and enhance the functionality, quantity and quality of soils | | | No significant cumulative effects have been identified. | N/A | | |

| SEA Topic | SEA Objective | Construction Effects | Operation Effects | Comments | Mitigation | Construction Effects | Operation Effects |
|------------------|--|----------------------|-------------------|---|---|----------------------|-------------------|
| Air | Reduce and minimise air emissions | | | No significant cumulative effects have been identified. | N/A | | |
| Water | Increase resilience and reduce flood risk | | | No significant cumulative effects have been identified. | N/A | | |
| | Protect and enhance the quality of the water environment and water resources | | | No significant cumulative effects have been identified. | None identified. | | |
| | Deliver reliable and resilient water supplies | | | The options will improve water transfer across the WRMP24 area, improving water resource management and resilience of supply. Significant positive effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_KMW_RE-DRO_ALL_ALL_si_bew2 ■ SWS_HSW_HI-ROC_WT1_ALL_cpy_tst_60 ■ SWS_HSE_HI-TFR_T2S_CNO_spar to ott 120 pot | N/A | | |
| Climatic Factors | Reduce embodied and operational carbon emissions | | | Embodied carbon will be associated with the extraction, processing, manufacture and transport of construction materials (typically pipelines) and from | Investigate use of renewables during construction and operation for energy supply and use of materials with lower embodied carbon. Carbon | | |

| SEA Topic | SEA Objective | Construction Effects | Operation Effects | Comments | Mitigation | Construction Effects | Operation Effects |
|-----------|--|----------------------|-------------------|--|--|----------------------|-------------------|
| | | | | construction activities. Operational carbon emissions will be associated with the energy used e.g. pumping stations, WTW works, desalination plans). Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_KME_HI-DES_ALL_ALL_ios10 ■ SWS_KME_HI-DES_ALL_ALL_ios20 Isle of Sheppey Desalination Plant 20MI/d ■ SWS_KME_HI-DES_ALL_ALL_ios20_p2 ■ SWS_SBZ_HI-DES_ALL_ALL_shom40 | footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will be available. | | |
| | Reduce vulnerability to climate change risks and hazards | | | No significant cumulative effects have been identified. | N/A | | |
| Landscape | Conserve, protect and enhance landscape, townscape and seascape character and visual amenity | | | Significant negative effects are identified in respect of option: <ul style="list-style-type: none"> ■ SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm | Best practice will be implemented to avoid negative effects, ground will be reinstated, however likely to be some disturbance to landscape during works. Implement screening and other best practice techniques to minimise operational impacts. | | |

| SEA Topic | SEA Objective | Construction Effects | Operation Effects | Comments | Mitigation | Construction Effects | Operation Effects |
|-----------------------------|---|----------------------|-------------------|---|------------|----------------------|-------------------|
| Historic Environment | Conserve, protect and enhance the historic environment, including archaeology | | | No significant cumulative effects have been identified. | N/A | | |
| Population and Human Health | Maintain and enhance the health and wellbeing of the local community | | | Significant negative effects are identified in respect of options: <ul style="list-style-type: none"> ■ SWS_SNZ_RE-OTH_ALL_ALL_neub-sn ■ SWS_SWZ_RE-OTH_ALL_ALL_neub-sw ■ SWS_SBZ_RE-OTH_ALL_ALL_neub-sb ■ SWS_SHZ_RE-OTH_ALL_ALL_neub-sh ■ SWS_HSE_RE-OTH_ALL_ALL_neub-hse ■ SWS_KME_RE-OTH_ALL_ALL_neub-kme ■ SWS_KTZ_RE-OTH_ALL_ALL_neub-kt ■ SWS_IOW_RE-OTH_ALL_ALL_neub-iw ■ SWS_HAZ_RE-OTH_ALL_ALL_neub-ha ■ SWS_HKZ_RE-OTH_ALL_ALL_neub-hk ■ SWS_HRZ_RE-OTH_ALL_ALL_neub-hr ■ SWS_HWZ_RE-OTH_ALL_ALL_neub-hw | N/A | | |

| SEA Topic | SEA Objective | Construction Effects | Operation Effects | Comments | Mitigation | Construction Effects | Operation Effects |
|-----------------|---|----------------------|-------------------|---|------------|----------------------|-------------------|
| | | | | <ul style="list-style-type: none"> ■ SWS_HSW_RE-OTH_ALL_ALL_neub-hs ■ SWS_KMW_RE-OTH_ALL_ALL_neub-kmw | | | |
| | Maintain and enhance tourism and recreation | | | No significant cumulative effects have been identified. | N/A | | |
| Material Assets | Minimise resource use and waste production | | | No significant cumulative effects have been identified. | N/A | | |
| | Avoid negative effects on built assets and infrastructure | | | No significant cumulative effects have been identified. | N/A | | |

7.3. Cumulative Effects with Existing Relevant Plans, Programme and Projects

7.3.1. Introduction

The SEA Regulations require that the cumulative effects of the draft WRMP24 are assessed. This includes the cumulative effects of the individual preferred options that comprise the preferred programme and the effects of the draft WRMP24 in combination with other plans and programmes.

The cumulative effects of the individual options that comprise the preferred programme of draft WRMP24 preferred options are presented in **Section 7.2**, in addition to which the cumulative effects of the draft WRMP24 in combination with other plans and programmes, are relevant, including:

- the draft WRMP24 with SWS's Drought Plan;
- the draft WRMP24 with the Water Resources South East (WRSE) Regional Plan;
- the draft WRMP24 with other plans e.g., Environment Agency National Drought Plan, River Basin Management Plans, Shoreline Management Plans;
- the draft WRMP24 with other Nationally Significant Infrastructure Projects (NSIPs).

There are inherent uncertainties associated with assessing the cumulative effects of the draft WRMP24, relating to factors such as: future changes to baseline environmental conditions; future population and economic growth; the deliverability of proposed NSIPs and potential future projects, including those associated with other water companies in the WRSE area. As such, it will be necessary to keep under review these factors as the preferred programme is implemented (e.g. in Environmental Impact Assessments (EIA) and HRAs) to ensure that the latest and most up to date information is taken into account.

7.3.2. Regional and Water Resource Management Plans

Water Resources South East Regional Plan

WRSE Regional Plan aims to be a resilient plan that considers the whole of south east England as a single region, unconstrained by water company boundaries, to determine the best value options to meet the water requirements of the domestic and non-domestic consumers in the region. The Regional Plan is to be finalised in 2023. The WRMPs to be published by individual water companies are expected to align with the regional plan consistent with national guidance³⁸. To support the alignment, WRSE commissioned a new integrated environmental assessment process to provide a consistent framework for environmental assessments of both the WRSE Regional Plan and the constituent WRMPs. The environmental assessment methodology has been applied and high-level assessments completed of the WRSE Emerging Regional Plan in January 2021. SEA, HRA and WFD assessments³⁹ has been completed to accompany the Best Value Draft Regional Plan to be issued for public consultation. These assessments provide the cumulative effects assessment of the draft WRMPs in conjunction with the draft Regional Plan. The following cumulative effects could occur against the following SEA topics:

- **Biodiversity, flora and fauna** - There is potential for cumulative effects on a number of statutory and non-statutory designated sites arising from construction and operational activities. WRSE state that an in-combination HRA assessment has not been undertaken for the options selected within the Best Environmental and Societal Plan that fall within the water company boundary buffers, however it is likely there will be in-combination effects on Natura 2000 sites. Major negative effects have therefore been identified for construction and operation as a worst-case scenario, however this may change. There is also potential for cumulative effects on aquatic ecology during the construction.

³⁸ UK Government (2022) *Water Resource Planning Guideline* [online]. Available at: <https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline>.

³⁹ WRSE (2022) WRSE Draft Plan Draft - Strategic Environmental Assessment Environmental Report, Habitats Regulations Assessment Report and Water Framework Directive Assessment Report

Priority habitats, woodland and Ancient Woodland may also be impacted cumulatively. The catchment management schemes within the Best Environmental and Societal Plan which are not specifically within the water company boundary buffers, however they may result in positive cumulative effects as they include schemes such as river restoration, terrestrial habitat / management and wetland creation, amongst others.

- **Soil** - There is potential for cumulative disturbance effects on agricultural land during the construction phase but also permanent losses where options have above ground infrastructure. The catchment management schemes may lead to positive cumulative effects as they include options which aim to improve water quality at landscape scale with a focus on soil health/management.
- **Water** - There are multiple possible options within the same catchment which may have cumulative effects during operation. The combined benefit of the options is likely to lead increased reliability and resilience of water supplies. A cumulative effects assessment as part of the WFD compliance assessment is yet to be completed; however, indicatively, there could be effects on waterbodies where cumulative effects may occur. The catchment management schemes include activities to improve water quality and reduce pollutants, increase resilience to low flows and increase the storage of water within the environment, facilitating resilience during drought. Therefore, having the potential to result in positive cumulative effects. The demand management options will provide positive effects through helping to reduce demand and leakage.
- **Air** - There is likely to be localised cumulative effects on air quality from the construction phase for options which are located within close proximity and whose phasing overlaps. The effects may require further investigation if they are located within AQMAs.
- **Climatic Factors** – Options within the draft WRMP are likely to result in major construction and operational carbon emissions. For climate resilience, there is potential for negative cumulative effects, although demand management and catchment management schemes may provide some further resilience by increasing efficiencies and water retention.
- **Landscape** – There is the potential for cumulative effects from the location of multiple options in designated landscapes such as AONBs and South Downs National Park.
- **Historic Environment** - There is potential for cumulative effects on the setting of the historic environment given the proximity of options being constructed at the same to historic environment assets.
- **Population and Human Health** - The local community, tourism and recreation all have the potential to be affected by options, particularly where due to proximity and phasing, sensitive members of the community are affected by construction disturbance, noise, vibration and traffic. Cumulative, the proposed schemes will represent a significant regional investment, and could create significant benefits to the economy, employment opportunities and supply chain. In operation, they will also have the potential to have significant positive cumulative effects on health and wellbeing. The inclusion of catchment management options such as river restoration, natural water retention, wetland creation and nutrient and sediment reduction all have the potential to have positive cumulative effects on tourism and recreation.
- **Material Assets** - The cumulative effects of the new infrastructure proposed will require significant quantities of materials and generate waste, including excavated materials, although will also present substantial material reuse opportunities.

Other Water Company Water Resource Management Plans (WRMPs)

As SWS's neighbouring water companies have worked collaboratively on the WRSE Regional Plan, to which each WRMP is aligned, it is not envisaged that there will be any other cumulative effects than those identified above.

Southern Water Drought Plan 2022

The Drought Plan is a statutory plan and will set out sets out how SWS will respond to drought conditions in its area, ensuring the continued supply of water to customers during periods of low rainfall when water resources become depleted, whilst minimising any negative effects of the actions taken. SWS published its draft Drought Plan for consultation in June 2021, its Statement of Response⁴⁰ in September 2021 and an addendum⁴¹ in April 2022.

The scope for in-combination effects of the WRMP24 with the drought management measures included in the Drought Plan 2021 is limited as in most cases the drought management measures have been integrated into the draft WRMP24. There is the potential for cumulative beneficial effects between the Test and Itchen catchment management options with the Test Surface Water Drought Permit/Order and the Lower Itchen sources Drought Order by helping improve the environmental resilience of these rivers to abstraction at times of low river flows.

7.3.3. Other Plans and Projects

Environment Agency National Drought Plan

Assessment of the potential for cumulative impacts of WRMP24 options with drought options listed in the Environment Agency national Drought Plan⁴² has been undertaken. The information used to carry out these assessments is considered to be the most up to date information available at the time of writing, but the assessments should be reviewed at the time of drought option implementation to ensure that no changes to the Environment Agency Drought Plan have been made in the intervening period, and that the assessment, therefore, remains valid.

Part of the Environment Agency's role is to reduce the impact of drought on the natural environment by taking specific actions. They can apply for environmental Drought Orders if the environment is suffering serious damage because of abstraction during a drought. The plan confirms that the Environment Agency would work with stakeholders, including water companies, to identify where and when it would be necessary to take actions to protect the environment and its potential effects on any essential public supplies or infrastructure. The Environment Agency can restrict spray irrigation during periods of drought which would have a cumulative beneficial effect alongside SWS's demand management measures.

River Basin Management Plans (RBMP) (Thames River Basin District and South East River Basin District Plans)

Assessment of the potential for cumulative effects with these River Basin Management Plans (RBMPs) has been undertaken. The information used to carry out these assessments is considered to be the most up to date information available at the time of writing, but the assessments should be reviewed at the time of drought option implementation to ensure that no changes to the River Basin Management Plans have been made in the intervening period, and that the assessment, therefore, remains valid.

The 2015 Thames and South East RBMPs describes the planned steps to implement the measures required to achieve the environmental objectives of the Water Framework Directive (WFD). They provide the

⁴⁰ SWS (2021) *Southern Water's Draft Drought Plan 2021 Statement of Response* 20 September 2021. Available on line: <https://www.southernwater.co.uk/media/5304/drought-plan-22-statement-of-response-final-20-sept-2021.pdf>

⁴¹ SWS (2022) *Southern Water's Draft Drought Plan 2021 Addendum to Statement of Response* 14 April 2022. Available on line: <https://www.southernwater.co.uk/media/6655/sw-drought-plan-sor-addendum-april-2022.pdf>

⁴² Environment Agency (2017). *Drought response: our framework for England*. June 2017.

framework for protecting and enhancing the water environment. The SEAs^{43,44} of the RBMPs determined that the plan was likely to have significant positive effects on the environment, particularly in respect of biodiversity, water, population and human health and that any local negative effects would expect to be mitigated during implementation. Therefore, there will be **no cumulative impacts** between the Thames or South East RBMPs and the WRMP24.

Cumulative effects with Shoreline Management Plans

Shoreline Management Plans provide a policy context for shoreline / coastal zone management and development. The following Shoreline Management Plans are available within the public domain and were considered for in-combination impacts:

- SMP 9 The Medway Estuary and Swale
- SMP10 Isle of Grain to South Foreland.
- SMP 11 Beachy Head to South Foreland
- SMP 12 Beachy Head to Selsey Bill (South Downs)
- SMP 13 Hurst Spit to Selsey Bill (North Solent)
- SMP 14 Isle of Wight
- SMP 15 Durlston Head to Hurst Spit (Poole & Christchurch Bays)

The assessments for any potential in-combination impacts between these plans and the measures contained SWS's WRMP24 were considered with regards to spatial proximity and/or hydrological and/or hydrographical connectivity. No in-combination likely significant effects were identified in respect of the policies set out in the plans. Measures put forward in the Isle of Wight Shoreline Management Plan included the proposed creation of a 30.9ha compensatory habitat of coastal grazing marsh for the Solent and Southampton Water Ramsar site. Such a measure could be considered to have a minor beneficial in-combination effect. The potential for in-combination effects would need to be reviewed again for an application-specific HRA against the latest version of the relevant Shoreline Management Plan if any options with the potential to affect the coastal zone were needed in a future drought event, in dialogue with the Environment Agency, local planning authority and/or other relevant statutory bodies and stakeholders.

Cumulative effects with identified relevant strategic level projects

The Planning Act 2008 introduced a procedure to streamline the decision-making process for Nationally Significant Infrastructure Projects (NSIPs). Under the Act, a developer wishing to construct a NSIP must first apply to the Secretary of State for development consent. National Policy Statements (NPSs) establish the need for specific types of infrastructure and provide planning guidance for promoters of NSIPs, and the basis for the examination by the Examining Authority and decisions by the Secretary of State on development consent order applications. A number of NPSs have been published which set out the definition, and in some cases the location, of NSIPs. The current status of NPSs is set out in **Table 7.3**.

43 Environment Agency (2016) The River basin management plan for the Thames River Basin District Strategic Environmental Assessment: Statement of Particulars Updated December 2015.

<https://www.gov.uk/government/collections/river-basin-management-plans-2015>

44 Environment Agency (2016) The River basin management plan for the South East River Basin District Strategic Environmental Assessment: Statement of Particulars Updated December 2015.

<https://www.gov.uk/government/collections/river-basin-management-plans-2015>

Table 7.3: Current Status of National Policy Statements

| National Policy Statement (NPS) | Status | Are Potential Locations of NSIPs included in the NPS? |
|--|-------------------------------|---|
| Overarching Energy EN-1⁴⁵ | Designated July 2011 | No |
| Fossil Fuel Electricity Generating Infrastructure EN-2 | Designated July 2011 | No |
| Renewable Energy Infrastructure EN-3 | Designated July 2011 | No |
| Gas Supply Infrastructure and Oil and Gas Pipelines EN-4 | Designated July 2011 | No |
| Electricity Networks Infrastructure EN-5 | Designated July 2011 | No |
| Nuclear Power Generation EN-6 | Designated July 2011 | Yes |
| Ports | Designated January 2012 | No |
| Waste Water Infrastructure | Designated March 2012 | Yes |
| Hazardous Waste Infrastructure | Designated June 2013 | No |
| National Networks | Designated January 2015 | No |
| Airports NPS: new runway capacity and infrastructure at airports in the South East of England | Designated June 2018 | Yes |
| Water Resources Infrastructure | Draft published November 2018 | No |
| Geological Disposal Infrastructure | Designated October 2019 | No |

The draft WRMP is not expected to have any adverse cumulative effects in-combination with the NPSs listed above. This is because the NPSs are either not site specific or because specific NSIP proposals contained in the NPS are unlikely to affect, or be affected by, the measures that comprise the draft WRMP24 e.g. sites for new nuclear power stations, the two NSIPs set out in the Waste Water Treatment NPS and the proposals to increase runway capacity in the Airports NPS. Defra is currently preparing a NPS for water resources. This will set out the need for NSIPs related to water resources, and the Government's policies to deliver them. Whilst this NPS will not be site specific, implementation of the draft DWMP is likely to be compatible with those objectives of the NPS for improving water supply resilience.

Qualifying NSIPs that have received a decision by the Secretary of State to grant a Development Consent Order, in accordance with the relevant NPS and Planning Act 2008 requirements are outlined in **Table 7.3**. The Planning Inspectorate's National Planning Infrastructure database⁴⁶ identifies a further 14 projects at pre-application stage; however, decisions and subsequent project implementation on these additional projects is less certain.

⁴⁵ A revised draft National Policy Statement for Energy (and for EN2 to EN5) was published by the Government for consultation in September 2021.

⁴⁶ <https://infrastructure.planninginspectorate.gov.uk/projects/south-east/>

Table 7.3: Consented Major Projects in South East England

| Project | Developer | Decision |
|--|--|---------------|
| M25 junction 28 improvements | Highways England | May 2022 |
| M25 junction 10/A3 Wisley interchange improvement | Highways England | May 2022 |
| Thurrock Flexible Generation Plant | Thurrock Power Ltd | February 2022 |
| Wheelabrator Kemsley Generating Station (K3) and Wheelabrator Kemsley North (WKN) Waste to Energy Facility | WTI/EFW Holdings Ltd | February 2021 |
| Southampton to London Pipeline Project | Esso Petroleum Company, Limited | October 2020 |
| Cleve Hill Solar Park | Cleve Hill Solar Park Ltd | May 2020 |
| Kemsley Paper Mill (K4) CHP Plant | DS Smith Paper Ltd | July 2019 |
| Tilbury2 | Port of Tilbury London Limited | February 2019 |
| Kentish Flats Extension | Vattenfall | December 2018 |
| M20 Junction 10A | Highways England | 2017 |
| Richborough Connection Project | National Grid | 2017 |
| M4 Junctions 3 to 12 Smart Motorway | Highways Agency (now Highways England) | 2016 |
| Rampion Offshore Wind Farm | E.ON Climate and Renewables | 2014 |

The projects listed in Table 7.3 are a mix of onshore and offshore energy developments, energy infrastructure and transport infrastructure. With regard to cumulative effects with the WRMP24, these are likely to centre on effects associated with the construction phase, if located in similar areas, or if there is coincidence of proposed linear infrastructure and pipeline routes. The implications of such effects will need to be considered in detail at the next stage of WRMP scheme planning.

8. Mitigation

8.1. Overview

Key stages of the SEA process include Task B5: Mitigating adverse effects and Task B6: Proposing measures to monitor the environmental effects of implementing a plan or programme, as well as Stage E: Monitoring the significant effects of the plan or programme on the environment.

8.2. Mitigation Measures

The sections below describe how mitigation has been or will be addressed, as applicable and that the appropriate mitigation measures are implemented for any adverse effects identified. Mitigation may be defined as a measure to limit the effect of an identified significant impact or, where possible, to avoid the adverse impact altogether.

Consideration of mitigation measures has been an integral part of the SEA process and the selection of preferred options as part of the evolution of the WRMP24. Where options continue to demonstrate significant negative effect, taking into account mitigation measures, the implications of these significant negative effects will be considered as part of the further design and study work identified as part of the risk reduction programme. The detail of this mitigation needs to be considered during the planning phases of each of the individual measures if and when they are taken forward for implementation. This should then be consolidated into a Construction Environmental Management Plan (CEMP) for the scheme, noting that all works should be carried out in accordance with relevant Construction Design Management (CDM) Regulations 2015.

General good construction practice measures include:

- Invasive species on site are to be identified and removed in advance of construction;
- HGV routing, cap on movements, appropriate working hours
- Screening around the perimeter of works at the start of construction (creation of landscaping/planting for large scale construction)
- Footpath diversions established regarding construction work including pipelines
- Resources for construction of the scheme would be sourced locally where possible
- Minimising removal of spoil from construction sites
- Runoff from the construction sites would be attenuated and the quality managed according to best construction practices
- Appropriate pipeline laying techniques regarding river crossings
- Flood risk management during construction (temporary flood defence and siting of spoil and contaminants away from areas at risk of flooding)
- Siting of temporary and permanent works to minimise impacts on setting of heritage and landscape features
- Archaeological watching briefs during excavation
- Noise abatement barriers where required
- Dust control measures: dampening dust emissions from groundworks and vehicle washing

8.2.1. Species Specific Measures and Biodiversity

Most species-specific avoidance or mitigation measures can only be determined at the scheme level, following scheme-specific surveys, and 'best-practice' mitigation for a species will vary according to a range of factors that cannot be determined at this stage. The CEMP should include measures to minimise disturbance to biodiversity during the construction phase, for example:

- scheme design should aim to minimise the environmental effects by ‘designing to avoid’ potential habitat features that may be important e.g. those used by species that are European site interest features when outside the site boundary (e.g. linear features such as hedges or stream corridors; large areas of scrub or woodland; mature trees; etc.) through scheme-specific routing studies;
- the works programme and requirements for each measure should be determined at the earliest opportunity to allow investigation schemes, surveys and mitigation to be appropriately scheduled and to provide sufficient time for consultations with NE;
- night-time working, or working around dusk / dawn, should be avoided to reduce the likelihood of negative effects on nocturnal species;
- any lighting required (either temporary or permanent) will be designed with an ecologist to ensure that potential ‘displacement’ effects on nocturnal animals, particularly designated bat species, are avoided;
- all materials will be securely stored away from migratory routes / foraging areas that may be used by designated species;
- all excavations will have ramps or battered ends to prevent species becoming trapped; and
- pipe-caps must be installed overnight to prevent species entering and becoming trapped in any laid pipe-work.

For all river water bodies that could be impacted by abstraction (either from surface water or groundwater), further ecological evidence has been identified as being required including:

- improving the understanding of the impacts of changes to flow on physical habitat parameters, and resulting impacts for species;
- improving the understanding of impacts of changes to flow on ability of fish to pass barriers; and
- undertaking further ecology surveys including macroinvertebrate and macrophyte surveys, and eDNA for fish (while some data is available in all water body catchments, there is variability in the extent of data and the most recent sample dates).

All options will be subject to project-level environmental assessment, which will include assessments of their potential to affect European sites during their construction or operation. These assessments will consider or identify (*inter alia*):

- opportunities for avoiding potential effects on European sites through design (e.g. alternative pipeline routes; micro-siting; etc);
- construction measures that need to be incorporated into scheme design and or planning to avoid or mitigate potential effects – for example, ensuring that sufficient space is available for pollution prevention measures to be installed, such as sediment traps; and
- operational regimes required to ensure no adverse effects occur (e.g. maintain minimal flows – although note that these measures can only be identified through detailed investigation schemes).

Specific additional measures identified in the assessment include:

- During operation, it is unknown if the saline waste from the proposed new plant would be diluted within existing outflows therefore it is assumed hyper saline plumes would continue to effect designated habitats and species of the designated site. Impacts to benthic communities from concentrate discharges could be minimised by using properly-designed diffuser systems.

Specific enhancement measures will relate to the potential for the creation of new habitats associated with biodiversity net gain. These need to be considered on a scheme specific basis.

8.2.2. Scheme Design and Planning

All measures will be subject to project-level environmental assessment, which will include assessments of their potential to affect European sites during their construction or operation. These assessments should consider or identify (inter alia):

- opportunities for avoiding potential effects on European sites through design (e.g. alternative pipeline routes; micro-siting; etc);
- construction measures that need to be incorporated into scheme design and or planning to avoid or mitigate potential effects – for example, ensuring that sufficient space is available for pollution prevention measures to be installed, such as sediment traps; and
- operational regimes required to ensure no adverse effects occur (e.g. maintain minimal flows – although note that these measures can only be identified through detailed investigation schemes).

8.2.3. Pollution Prevention

There is a substantial body of general construction good-practice which is applicable to all of the proposed measures and can be relied on (at this level) to prevent significant or adverse effects on a European site occurring as a result of construction site-derived pollutants. The following guidance documents detail the current industry best-practices in construction that are relevant to the proposed schemes:

- DEFRA's Pollution prevention for businesses (<https://www.gov.uk/guidance/pollution-prevention-for-businesses>);
- Venables R. et al. (2000) Environmental Handbook for Building and Civil Engineering Projects. 2nd Edition. Construction Industry Research and Information Association (CIRIA), London.

The best-practice procedures and measures detailed in these documents should be followed for all construction works derived from the draft WRMP24 as a minimum standard, unless scheme-specific investigations identify additional measures and / or more appropriate non-standard approaches for dealing with potential site-derived pollutants.

Care should also be taken during construction regarding the potential for contaminants such as silt, concrete or fuel oil to pollute water courses via surface run off. This can be mitigated by undertaking all construction activities in accordance with relevant best practice pollution prevention guidance. Pollution Incident Control Management Plans should be developed to limit adverse effects arising from pollution events.

8.2.4. Effects on Air Quality

With regard to the potential for effects on air quality, the following measures should be considered for inclusion within the CEMP:

- use of low emission plant, air quality monitoring and preparation of a Dust Management Plan;
- a Construction Traffic Management Plan (CTMP) could be prepared for each preferred supply option to manage the traffic impacts associated with construction which would include measures to mitigate air quality effects including routing of traffic to avoid sensitive receptors and the timing of HGV movements to avoid peak traffic hours;
- low emission/electric vehicles should be used during the construction and operational phases where possible, consistent with the Water UK Net Zero 2030 Route Map.

8.2.5. Effects on Population and Human Health

With regard to the potential for effect on health, social and economic well-being, the following measures should be considered for inclusion within the CEMP:

- care should be taken to avoid works near to the most sensitive health receptors In the development of detailed designs for pipeline routes;
- routing of traffic to avoid sensitive receptors and the timing and phasing of HGV movements to avoid peak traffic hours;

- construction activities should be undertaken so as to minimise short term adverse effects on recreational areas, such as footpaths, and on landscape and biodiversity.

8.2.6. Effects of Climate Change and Resource Use

- Design measures should be adopted to ensure the long-term resilience of infrastructure to the effects of climate change. Measures may include, for example, the provision/enhancement of natural flood management measures as part of wider biodiversity enhancement and habitat creation.
- Measures to investigate and optimise the use of materials with lower embodied carbon and renewables for energy supply, consistent with the Water UK Net Zero 2030 Route Map.
- Completion of a carbon footprint study could help identify areas for carbon savings, offsets or alternative materials.

Where significant raw materials are required for options, this can be mitigated by utilising recycled and locally sourced materials. Construction and operational wastes should also be reused/recycled where appropriate.

8.2.7. Effects on Cultural Heritage and Landscape

The potential for adverse impacts of the settings of cultural heritage assets should be considered early in the design process and any adverse effects minimised, for example through micro-siting/ alternative pipeline routes to avoid designated sites. Further measures, for consideration within the CEMP could include:

- careful consideration being given to the presence of heritage assets when finalising proposals for pipeline routing;
- where required, a programme of trial trenching and archaeological recording should be undertaken at development sites, with results disseminated;
- new above-ground infrastructure should be screened, where possible and informed by a heritage appraisal/assessment, to minimise effects on the settings of heritage assets;
- consideration should be given to enhancing the significance of, and access to, heritage assets.

Proposed draft WRMP24 schemes could have a negative effect on landscape if new infrastructure is required, particularly where development cannot be located on previously developed land and/or where schemes are located within landscapes recognised for their importance and special qualities. In order to minimise such effects, new structures could be located close to existing structures or hedgerows and trees to provide some screening with the potential to utilise local building styles or incorporate landscaping schemes (e.g. tree/ hedge planting). Further measures, for consideration within the CEMP could include:

- where required, proposals should be accompanied by a lighting strategy that is designed to minimise outward glows;
- new above ground infrastructure should adopt high quality design principles where possible (for example, the use of local materials);
- proposals should be accompanied by a landscape mitigation plan, informed by a landscape and visual assessment (where required);

The mitigation measures described above would, in some cases, be implemented through Environmental Impact Assessment and planning process. In this way, effective mitigation plans can be developed to minimise many of the residual adverse effects currently identified in the SEA appraisals.

9. Next Steps and Proposals for Monitoring

9.1. Next Steps

The SEA, along with the findings of the HRA and WFD assessment, have been used to help inform the development of the draft WRMP24. In summary, the application of these processes has:

- Informed dialogue with the Environment Agency and Natural England as to the options to be included in the WRSE Emerging Regional Plan and the draft WRMP24.
- Identified a number of HRA and WFD risks.
- Identified a small number of options that have been excluded from the WRMP24 due to environmental and other concerns.

SWS is submitting the Draft WRMP24 and this Environmental Report to the Secretary of State for Environment, Food and Rural Affairs, for a request for publication and once directed to do so, SWS will publish the documents for consultation. Following consultation, and within 26 weeks of consultation beginning, SWS will need to prepare a Statement of Response to the representations received. The revised draft WRMP24 will be sent to the Government, and as changes are likely to be significant, is likely to be subject to further assessment and consultation. Following direction from the Government, the final WRMP24 will be published and implemented accordingly (anticipated August 2023). In conjunction with publishing the final WRMP24, a Post Adoption Statement will also be issued (to meet the requirements of SEA regulation 16 (4)). This will set out the results of the consultation and SEA processes and the extent to which the findings of the SEA have been accommodated in the final plan.

9.2. How Environmental Effects will be Considered During Plan Implementation

Once the Draft WRMP24 has been agreed, the preferred options for managing water supply and demand contained in it will need to be implemented through specific projects. As part of this process, each project may be subject to further assessment to understand and manage its potential environmental and social impacts. These assessments, which may include HRA and EIA, will take account of the issues discussed in this Environmental Report but will also be informed by the greater detail available as the work progresses about construction techniques, building materials, agreed locations and routes.

9.3. Monitoring the Effects of the WRMP

Monitoring is required to track the environmental effects to show whether they are as predicted, to help identify any adverse impacts and trigger deployment of mitigation measures. The SEA Regulations require the responsible authority to:

'monitor the significant environmental effects of the implementation of each plan or programme with the purpose of identifying unforeseen adverse effects at an early stage and being able to undertake appropriate remedial action.'

Monitoring the significant effects of the WRMP can help to answer questions such as:

- Were the SEA predictions of effects accurate?
- Is the WRMP24 contributing to the achievement of the SEA objectives?
- Are mitigation measures performing as well as expected?
- Are there any adverse effects? Are these within acceptable limits, or is remedial action desirable?

It is not necessary to monitor everything or monitor an effect indefinitely. Instead monitoring should be focussed on:

- significant effects that may give rise to irreversible damage, with a view to identifying trends before such damage is caused; and
- significant effects where there was uncertainty in the SEA and where monitoring would enable preventative or mitigation measures to be undertaken.

SWS will need to take a broad view of the findings of their ongoing monitoring processes to identify whether the WRMP24 has any significant unforeseen effects. Where these are identified, SWS may be required to put in place specific monitoring arrangements and will consider how best to mitigate or avoid the adverse consequences. These include cross-referencing to the SWS Biodiversity Action Plan.

The natural, built and human receptors potentially impacted by the development and operation of the options included in the WRMP24 strategies and possible indicators of effects are set out in Table 9-1. These proposed indicators would form the core component of a monitoring programme to assess whether the identified effects in the SEA are occurring as anticipated, or whether it is giving rise to greater or lesser effects (adverse or beneficial). In turn, the monitoring may identify changes to the mitigation measures necessary to minimise adverse effects and/or modifications to scheme design or operation to further augment beneficial effects.

For biodiversity, flora and fauna, as supply schemes move into the detailed design stage, a range of surveys will be required for HRA, WFD and other environmental regulatory requirements. For example, Protected Species surveys will be carried out to confirm the presence or absence of Protected Species. Where Protected Species are identified, we will follow Natural England's Standing Advice for Protected Species and consult further with Natural England to discuss how the scheme design and operation can be optimised to avoid adverse effects on the relevant species.

As options are brought forward for development, further specific monitoring requirements may be set out in detailed designs and plans accompanying scheme development (including, where applicable, formal applications for any required environmental permits or abstraction licences, planning permission, as well as any scheme-specific HRA and WFD assessments). These will be discussed with relevant regulatory and statutory bodies and stakeholders to agree the appropriate scale and duration of such scheme-specific monitoring activities proportionate to the assessed environmental risks.

Table 9-1 SEA monitoring indicators for WRMP24

| Impacted receptor | Monitoring indicators | Source(s) of Information |
|--|--|--------------------------|
| Water resources, water quality, biodiversity | Proportion of surface waters and groundwater waterbodies at 'Good' WFD status | Natural England |
| | Specific species and habitats surveys | SWS/Natural England |
| | Condition of European Sites and SSSIs according to Natural England condition assessments | Natural England |
| | Progress against the Southern Water biodiversity action plan | SWS |
| | Progress against Southern Water Reporting Criteria ⁴⁷ e.g. Water quality compliance; Water supply interruptions; Leakage; | SWS |

⁴⁷ https://www.southernwater.co.uk/media/4902/reporting_criteria_2020_21.pdf

| Impacted receptor | Monitoring indicators | Source(s) of Information |
|------------------------------|---|---|
| | Water supply resilience; Mains repairs; Unplanned outage Risk of severe restrictions in a drought; Treatment works compliance; River water quality; Delivery of water industry national environment programme requirements; Maintain bathing waters as excellent; Improve the number of bathing waters to at least Good; Improve the bathing waters at Excellent quality | |
| Climate factors | Net greenhouse gas emissions per MI (million litres) of treated water (kg CO2 equivalent emissions per MI) reported annually by Southern Water Progress against Southern Water Reporting Criteria ⁴⁸ e.g. Renewable generation | SWS |
| Transport | Transport fleet fuel consumption, emissions and mileage, as monitored routinely by Southern Water | SWS |
| Community amenity | Scheme level community disruption due to construction works / during operation (where applicable) would be monitored through an Environmental Management Plan agreed as part of the planning permission process | SWS |
| | Complaints logged with Southern Water and Local Authority Environmental Health Officers or equivalent | SWS/Local Authority Environmental Health Officers |
| | Responses gauged through customer satisfaction surveys and reported in Southern Water's annual performance processes Progress against Southern Water Reporting Criteria ⁴⁹ e.g. Customer satisfaction (C-MeX & D-MeX) | SWS |
| Air quality | Scheme-specific monitoring during construction works / during operation (where applicable) would be monitored through an Environmental Management Plan agreed as part of the planning permission process | SWS/Local planning Authorities |
| | Changes in air quality as monitored by the Defra Automatic Urban and Rural Network, including using this data to establish the baseline conditions | Defra |
| Landscape and visual amenity | Baseline, construction phase and operational phase Landscape and Visual Impact Assessments or equivalent assessment techniques of sensitive landscapes and visual amenity identified in the SEA (and subsequent planning application submissions) as being at a major or moderate adverse effect. Assessments to be carried out in consultation with appropriate bodies, such as the National Park Planning Authorities, relevant | SWS/National Park Authorities/AONB Management Bodies/ Natural England |

⁴⁸ https://www.southernwater.co.uk/media/4902/reporting_criteria_2020_21.pdf

⁴⁹ https://www.southernwater.co.uk/media/4902/reporting_criteria_2020_21.pdf

| Impacted receptor | Monitoring indicators | Source(s) of Information |
|-------------------|--|--------------------------|
| | AONB committees and Natural England. These surveys will aid planning and evaluation of the success of proposed mitigation measures to reduce adverse effects on landscape and visual amenity. | |
| Cultural heritage | Condition of buried archaeology would be monitored during construction works as part of a watching brief and associate response measures as set out in the Environmental Management Plan agreed as part of the planning permission process | SWS |
| | Consultation with Historic England, heritage asset owners and other relevant stakeholders to ensure adverse impacts are minimised and opportunities sought for heritage discovery and/or maintenance. | Historic England |
| | Reference to Historic England's monitoring of heritage assets such as Listed Buildings and Scheduled Monuments, Registered Battlefields, Registered Parks and Gardens, in particular the 'Heritage at risk' register. | Historic England |

10. Quality Assurance

The Government's Guidance on SEA⁵⁰ contains a quality assurance checklist to help ensure that the requirements of the SEA Directive are met. The checklist is reproduced in **Appendix A**, demonstrating how this Environmental Report meets the requirements.

⁵⁰ Office of the Deputy Prime Minister (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*.

Appendix A Quality Assurance Checklist

| Quality Assurance Checklist | |
|--|--|
| Objectives and Context | |
| The plan's or programme's purpose and objectives are made clear. | The purpose of the Draft WRMP is set out in Section 1 of this report. The objectives of the Draft WRMP are set out in Section 1 . |
| Environmental issues and constraints, including international and EC environmental protection objectives, are considered in developing objectives and targets. | Key environmental, social and economic issues (including protection objectives) identified through a review of relevant plans and programmes (see Section 2 of this report) and analysis of baseline conditions (see Section 3) have informed the development of the assessment framework presented in Section 4.3 . |
| Scoping | |
| Consultation Bodies are consulted in appropriate ways and at appropriate times on the content and scope of the Environmental Report. | The SEA scoping technical note set out the approach to assessing the likely significant environmental effects of the draft WRMP24. It was issued for scoping consultation for 5 weeks from 21st February to 27th March 2022. Responses are summarised in this Environmental Report (see Appendix B). |
| The assessment focuses on significant issues. | Sustainability issues have been identified in the baseline analysis contained in Appendix E on a topic-by-topic basis. Section 3.3 summarises the key sustainability issues identified. |
| Technical, procedural and other difficulties encountered are discussed; assumptions and uncertainties are made explicit. | Section 4.5 describes the key limitations and difficulties encountered during the preparation of this Environmental Report. |
| Reasons are given for eliminating issues from further consideration. | N/a. |
| Alternatives | |
| Realistic alternatives are considered for key issues, and the reasons for choosing them are documented. | All constrained and preferred options have been assessed, as set out in Section 5 and Section 6 of this report. |
| Alternatives include 'do minimum' and/or 'business as usual' scenarios wherever relevant. | 'do minimum' and/or 'business as usual' are no relevant to this assessment. |
| The environmental effects (both adverse and beneficial) of each alternative are identified and compared. | This is included in Section 5, Section 6, and Appendix G of this report. |
| Inconsistencies between the alternatives and other relevant plans, programmes or policies are identified and explained. | No inconsistencies were identified. |
| Reasons are given for selection or elimination of alternatives. | This is set out in section 5. |
| Baseline Information | |
| Relevant aspects of the current state of the environment and their likely evolution without the plan or programme are described. | Appendix E and Section 3.2 of this report characterises the current environmental baseline conditions, along with how these are likely to change in the future. |
| Environmental characteristics of areas likely to be significantly affected are described, including areas wider than the physical boundary of the plan area where it is likely to be affected by the plan. | Throughout Appendix E and Section 3.2 of this report, reference is made to areas which may be affected by the WRMP24. |

| Quality Assurance Checklist | |
|---|---|
| Difficulties such as deficiencies in information or methods are explained. | Section 3.3 details limitations of the data used in the report and assumptions made. |
| Prediction and Evaluation of Likely Significant Environmental Effects | |
| Effects identified include the types listed in the Directive (biodiversity, population, human health, fauna, flora, soil, water, air, climate factors, material assets, cultural heritage and landscape), as relevant; other likely environmental effects are also covered, as appropriate. | This is set out in Sections 5, 6, 7 and Appendix E, G and H of this report. |
| Both positive and negative effects are considered, and the duration of effects (short, medium or long-term) is addressed. | This is set out in Sections 5, 6, 7 and Appendix E, G and H of this report. |
| Likely secondary, cumulative and synergistic effects are identified where practicable. | Likely secondary, cumulative and synergistic effects are considered in Section 7 of this report. |
| Inter-relationships between effects are considered where practicable. | This is set out in Sections 5, 6, 7 and Appendix E, G and H of this report. |
| The prediction and evaluation of effects makes use of relevant accepted standards, regulations, and thresholds. | Relevant standards have been used where appropriate in undertaking the assessment. |
| Methods used to evaluate the effects are described. | Information on the methods used for evaluation of potential effects is included in Section 4 . |
| Mitigation Measures | |
| Measures envisaged to prevent, reduce and offset any significant adverse effects of implementing the plan or programme are indicated. | Mitigation measures are set out in Sections 5, 6, 7, 8 and Appendix E, G and H of this report. |
| Issues to be taken into account in project consents are identified. | This is set out in Sections 5, 6, 7 and 8 and Appendix E, G and H of this report. |
| The Environmental Report | |
| Is clear and concise in its layout and presentation. | We believe the report is clear and concise. |
| Uses simple, clear language and avoids or explains technical terms. | The report uses accessible language wherever possible. |
| Uses maps and other illustrations where appropriate. | Maps and illustrations have been utilised in the report. |
| Explains the methodology used. | The method used is set out in the report in Section 4 . |
| Explains who was consulted and what methods of consultation were used. | Appendix B and Appendix C of this report outlines the consultation that has been carried out to-date. |
| Identifies sources of information, including expert judgement and matters of opinion. | Sources of information are included throughout the report. |
| Contains a non-technical summary covering the overall approach to the SEA, the objectives of the plan, the main options considered, and any changes to the plan resulting from the SEA. | A Non-Technical Summary has been included as part of the report. |
| Consultation | |
| The SEA is consulted on as an integral part of the plan-making process. | The previously issued SEA Scoping Report and early draft Environmental Report were consulted upon and responses to these are included in this Environmental Report (see Appendix B and Appendix C). |

| Quality Assurance Checklist | |
|---|---|
| Consultation Bodies and the public likely to be affected by, or having an interest in, the plan or programme are consulted in ways and at times which give them an early and effective opportunity within appropriate time frames to express their opinions on the draft plan and Environmental Report. | Consultation on the Draft WRMP Environmental Report will be undertaken, with responses summarised in the Statement of Response. |
| Decision-making and Information on the Decision | |
| The environmental report and the opinions of those consulted are taken into account in finalising and adopting the plan or programme. | To be included in the Post Adoption Statement, completed when the Final WRMP24 is published. |
| An explanation is given of how they have been taken into account. | To be included in the Post Adoption Statement, completed when the Final WRMP24 is published. |
| Reasons are given for choosing the plan or programme as adopted, in the light of other reasonable alternatives considered. | To be included in the Post Adoption Statement, completed when the Final WRMP24 is published. |
| Monitoring Measures | |
| Measures proposed for monitoring are clear, practicable and linked to the indicators and objectives used in the SEA. | The report sets out potential indicators that SWS could use in Section 9 . |
| Monitoring is used, where appropriate, during implementation of the plan or programme to make good deficiencies in baseline information in the SEA. | The suggestions for monitoring are included in Section 9 of the report. Monitoring will take place following implementation WRMP. |
| Monitoring enables unforeseen adverse effects to be identified at an early stage. (These effects may include predictions which prove to be incorrect.) | The suggestions for monitoring made in Section 9 are for SWS to act on, with monitoring taking place following implementation of the WRMP24. |
| Proposals are made for action in response to significant adverse effects. | Mitigation measures and their rationale are set out in Section 8 of this report. |

Appendix B Scoping Report Consultation Responses

| Consultee | Comments | SWS Response |
|----------------------------------|--|--|
| Environment Agency 13/04/2022 | No comments | Noted |
| Natural England 15/03/2022 | Southern Water should not rely solely on the WRSE SEA scoping (September 2020), as it is uncertain at this stage whether this has been updated to take on board Natural England's previous comments, which concluded that this version was not legislatively compliant. | This Environment Report has been prepared using the WRSE Method Statement: Environmental Assessment (November 2021) which is compliant with SEA Directive. |
| | Updated version can be used by the water companies (we would still recommend this is checked by their legal team to ensure they are happy to use it and that there is nothing else to add, in relation to individual WRMPs). Water companies should still inform NE of their approach and/or provide their updated version to NE for review. | This Environment Report contains updated Scoping material from the WRSE SEA and the Environment Report of the SWS Drought Plan. The WRSE Method Statement: Environmental Assessment (November 2021) has been used as the methodology for compiling this Environment Report. |
| | Water companies should consult NE, as a regulator, separate to WRSE, on their approach regarding the SEA scoping for their WRMPs. Natural England support Southern Water carrying out their own HRA, WFD, BNG and Natural capital assessments based on the WRSE methodology statements, it is however the company's responsibility to ensure the WRSE methodology statements are legislatively compliant before using. | Natural England will be consulted, as a statutory consultee, on all material produced as part of the assessment of WRMP24. |
| | Natural England are aware of the potential schemes listed in the letter dated 24 February 2022 and are discussing with relevant parties in Southern Water Services in most cases. We would encourage continued engagement on these schemes as they progress to ensure the best outcomes can be achieved for the environment that meet the necessary legislative requirements. Further discussions are needed on some of these options, as little or no engagement has occurred with Natural England to date. | SWS recognise and value the opportunity of ongoing engagement with Natural England (and all statutory consultees). SWS recognise that for the options considered, further work is required. This includes engagement and consultations with stakeholders to inform understanding and management of any likely risks, informed by evidence. |
| | Natural England is pleased demand management remains a crucial component of managing your supply and demand balance in | Noted |

| Consultee | Comments | SWS Response |
|--|---|---|
| | <p>the future and that the target 100 programme will be continued. This is an important step to reduce water usage along with 2050 water leakage commitment.</p> | |
| <p>Historic England 15/03/2022</p> | <p>We are concerned that the scoping methodology for Southern Water’s WRMP24 environmental assessment (including SEA) may inadequately cover the issues that may arise in respect of the potential effects of proposed development sites on heritage assets.</p> | <p>The methodology has been developed through the WRSE plan preparation process which has been subject to a separate consultation exercise.</p> |
| | <p>This is because we raised concerns about the proposed Water Resources South East Method Statements when consulted on these in August 2020. In particular, we noted on our response that “We could not identify coverage of these matters (i.e. historic environmental or cultural heritage) in any of the other Method Statements; we would request clarification that this is the case and whether it is considered appropriate to cover these matters in these documents.”</p> | <p>The methodology used on the Environment Report of the WRMP24 uses the methodology developed for the WRSE Regional Plan. This explicitly includes the Historic Environment as one of the core topics for the assessment of proposals.</p> <p>The assessment of Plans, Policies and Programmes (Appendix C), the Baseline (Appendix D) and Definitions of Significance (Appendix E) all include matters relating to the Historic Environment in accordance with the requirements of the SEA Directive.</p> |

Appendix C Environment Agency comments on June 2022 Environmental Report

| Criteria for consideration | | Description of how the SEA Environmental Report has met the criteria. Are there any areas of potential non compliance? Are there areas for improvement? | Southern Water Response |
|----------------------------|---|---|---|
| 1 | Has a Strategic Environmental Assessment been carried out for the draft WRMP? | Yes the draft WRMP was subject to an SEA, documented in the Environmental Report, the focus of this compliance review. | Agreed – no further action required. |
| 2 | How has the Environmental Report considered comments made at the SEA scoping stage? Have those in our response been considered fully? | Comments received at the scoping stage have been included in Appendix B of the Environmental Report. Some of the responses made by NE and HE are just 'noted' without a specific response; it is unclear if these comments have been fully resolved. NB. No response received from EA, is this correct? | Specific responses now included to demonstrate resolution of issues. |
| 3 | Is an outline of the content and main objectives of the draft WRMP given? | Section 1.4 of the Environmental Report sets out the process that has been followed in the WRMP development, from options appraisal to preferred plan. Very limited information however included in main report on the preferred options in the draft WRMP or its main objective. Information given on WRZ level of different option types considered e.g. catchment level options. Chapter 4 (methodology) refers to the 4 WRMP objectives, and their compatibility with SEA objectives, but a clearer section in the report on the main objectives of WRMP and the time period (and implementation timeframe) of the plan is needed as this is unclear. | The Environment Report at Section 1.4.3 documents the process of selection of Preferred Options, including a summary of the draft WRMP objectives and timing. |

| Criteria for consideration | | Description of how the SEA Environmental Report has met the criteria. Are there any areas of potential non compliance? Are there areas for improvement? | Southern Water Response |
|----------------------------|--|--|--------------------------------------|
| 4 | Does the Environmental Report outline an appropriate study area (taking into account pathways of impact and cross boundary effects)? Is the baseline given relevant and does it cover both the current state of the environment (current baseline) and the likely evolution of the baseline in the absence of the plan (future baseline)? How has baseline information been considered and used to influence the development of any objectives? Have aspects such as existing environmental problems and condition of the receptors been considered? | page 28 of the Environmental report outlines that the geographical scope of the SEA are the 14 WRZs and also the river and groundwater catchments that supply these WRZs (which lie outside of the WRZ boundaries). Map provided of study area. Relevant baseline information has been informed from WRSE baseline and updated and is included in Appendix C of the report. Both current and future baseline trends are included where possible. Condition of some receptors have been considered e.g. WFD waterbodies but some receptors e.g. biodiversity lists number of designations, not condition of these and their relation to the WRMP measures. Limitations of baseline is referred to in main report, e.g. COVID 19 pandemic and availability of up to date data. | Agreed – no further action required. |
| 5 | Has a plan, policy and programme review been undertaken? How has this review been used to influence the development of the objectives and focus of the SEA? | A PPP review has been undertaken and a summary of relevant plans included in the main report, along with key issues for consideration in the SEA included in the main report too. Appendix C includes further detail on key messages taken from relevant plans and policies and how these have informed the SEA objectives. | Agreed – no further action required. |

| Criteria for consideration | | Description of how the SEA Environmental Report has met the criteria. Are there any areas of potential non compliance? Are there areas for improvement? | Southern Water Response |
|----------------------------|--|--|---|
| 6 | Has a clear scope for the SEA been given, with justification for scoping in and out topics or effects? Has anything been missed? | Table 3.2 in the Environmental Report sets out the key issues and opportunities scoped in for each topic for the SEA. Section 4.2.1 states that all topics identified in Schedule 2 of the SEA Regulations have been scoped in for assessment. | Agreed – no further action required. |
| 7 | Does the Environmental Report set out an appropriate SEA assessment methodology? Are uncertainties/limitations of the assessment identified? | Chapter 4 of the Environmental Report sets out the SEA methodology followed, including SEA objectives and assessment questions relating to these and the SEA assessment framework. Limitations and assumptions are specified. It is noted that the draft WRMP will be issued to government in advance of the completed WRSE work and therefore preferred options can only be considered as 'candidate' at this stage, and adaptive pathway assessment is still to be carried out. The report refers to applying the WRSE assessment for SEA to the WRMP but this is not appended to the Environmental Report to understand its context; it would be useful for this to be appended. A lot of the supporting information comes from the WRSE SEA work, but as explained above, this plan is still in development, so does this provide sufficient information? Has the scope of this been consulted on for example or are changes likely? how will this be addressed in the WRMP, likely that the SEA will need to be revisited? Temporal scale of impacts correlate to the 5 year plan review period, does this assume all measures will be implemented at the start of the plan period? the SEA should cover the full 25 years of the plan (which I understand to be the minimum time period for the WRMP?) | The WRSE assessment methodology for SEA, which has been subject to a separate consultation process, is set out at section 1.5.1 and cross-referenced at Section 4.6. The timeframe of the implementation of the WRMP is covered in Section 1.5. |

| Criteria for consideration | Description of how the SEA Environmental Report has met the criteria. Are there any areas of potential non compliance? Are there areas for improvement? | Southern Water Response |
|--|---|---|
| <p>8</p> <p>Has an outline of the reasons for selecting the reasonable alternatives dealt with been given? How has the SEA methodology been used to assess reasonable alternatives? How has the SEA influenced the development of the draft WRMP and the selection of the preferred options?</p> | <p>Chapter 5 and 6 provide an overview of all the options assessed in the SEA. However, it is not clear in the report which ones have been selected as part of the preferred draft WRMP and no explanation/reason as to why other options have been discounted. Note that the plan also is to align with the WRSE regional plan, still in development. It should be noted that the alternatives considered align with the alternatives considered in the regional plan too. Section 9.1 states some high level info on how the SEA has influenced the WRMP development, e.g. highlighting HRA risks and discounting some options but it is not clear from the report which options these were. There is a lack of information in the report on what the draft WRMP contains and therefore how much the SEA has influenced its development and what the reasonable alternatives are to the plan that have been considered. Reasonable alternatives is also a key issue to consider given the HRA risks identified with a number of options (subject to HRA Appropriate Assessment still to be done?). How has the plan addressed this?</p> | <p>Section 5.2.1 sets out the reasoning behind the selection of preferred options, including the observations of the HRA.</p> |

| Criteria for consideration | Description of how the SEA Environmental Report has met the criteria. Are there any areas of potential non compliance? Are there areas for improvement? | Southern Water Response |
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| <p>9</p> <p>Does the Environmental Report clearly identify the likely significant environmental effects (positive and negative) that will result from the implementation of the actions within the draft WRMP? Have these effects been correctly identified and are there are key ones missing?</p> | <p>Significant effects are summarised in matrices in section 5 of the Environmental Report. Limited information is provided on the options being assessed in the report so it is difficult to analyse the results of the assessment. Detailed matrices for over 300 options is included in Appendix F with more further description of the measures, but as this is over 800 pages long, this is not very accessible for the reader. Major significant effects are identified in tables 5.2 and 5.3 (with more, but still limited, description of the measures). The approach to the assessment aggregates many impacts (both positive and negative) and therefore it is not clear how the major significant impact has been concluded, as one impact can skew the result; an example of this relates to table 5.3 relating to catchment management solutions. These are identified as significant adverse (presumably due to HRA risks identified); however, this does not account of the potential major positive impacts related to river restoration and working with natural processes. A number of the significant positive results included in tables 5.2-5.4 also relate to reliable water supply, the main objective of the options being considered, so does this skew the results further? Table 7.2 (cumulative effects assessment) implies that the HRA Appropriate Assessment has not yet been carried out, so how will this be integrated into the SEA? How has natural capital assessments and BNG assessments influenced the SEA appraisal and results?</p> | <p>The 122 preferred supply options are listed at Appendix F. The full suite of constrained options is set out at Appendix G.</p> |
| <p>10</p> <p>Does the Environmental Report set out the potential measures to prevent, reduce and offset significant adverse effects of implementing the draft WRMP?</p> | <p>Mitigation measures are set out in chapter 8 of the environmental Report and are also referred to in chapter 6 of the report, relating to significant environmental effects. Mitigation measures provided are very high level, generic and rely quite heavily on good practice approaches at construction stage. Many of the mitigation measures suggested in Chapter 6 do not appear to have reduced the level of significance of impacts and unclear if suggested mitigation measures have been applied to options in the draft WRMP, e.g. re routing of pipelines to avoid designated sites. Many of the suggested mitigation</p> | <p>The analysis of mitigation measures (Section 8.2) has been expanded to include analysis of how preferred options have been selected in light of potential reduction/offsetting of the likely impacts of the plan.</p> |

| Criteria for consideration | | Description of how the SEA Environmental Report has met the criteria. Are there any areas of potential non compliance? Are there areas for improvement? | Southern Water Response |
|----------------------------|--|--|--|
| | | measures are pushed to the project stage to consider but what commitments have been made at the plan level to reduce/offset impacts of the preferred plan? | |
| 11 | How have the findings from the Environmental Report been incorporated into the draft WRMP to reduce environmental impact and/or enhance environmental benefits? | Reference is made in the Environmental Report that SEA findings have fed into the development of the WRMP24, but not clear what specific changes were made as a result and not clear from the report what the draft WRMP contains. Section 9.1 identifies how the SEA and HRA have informed the plan, but high level and no detail of specific changes included. Reference in the report to the SWS Biodiversity Action Plan but no information on how the draft WRMP will aid delivery of this? Also lack of info in the report on the timeframe of the plan. HRA risks have been identified with options, how have these been considered in the draft plan? | Section 9.1 contains further detail of the evolution of the WRMP including the interrelationship with the HRA and the SWS Biodiversity Action Plan. |
| 12 | Have in-combination and cumulative effects been clearly identified? Are there any key ones missing? How has the Environmental Report considered the interaction between the effects of the draft WRMP and other relevant plans, policies and programmes? | Cumulative effects assessment is covered in chapter 7 of the Environmental Report. This covers cumulative effects within options, with other plans and programmes. The cumulative assessment with WRSE plan is indicative only due to emerging nature of the plan. This assessment refers to several options through their abbreviations so makes it very difficult for the reader to understand the assessment results. Cumulative effects identified for landscape and heritage in table 7.1, how has this influenced the results, assumed in table 7.2 these are not significant? As limited info is included on when measures will be implemented within timeframe of the plan, it is hard to understand how this has been considered within cumulative effects. | Text at Section 7.2 has been revised to reflect the likely significant effects, associated cumulative effects and implementation through the WRMP and taking into account the environmental assessments of the WRSE draft Regional Plan (which is high-level and qualitative in nature). |

| Criteria for consideration | | Description of how the SEA Environmental Report has met the criteria. Are there any areas of potential non compliance? Are there areas for improvement? | Southern Water Response |
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| | | Other plans are considered but this is high level in nature. Reference is made to SMPs and RBMPs, consideration of FRMPs missing? | |
| 13 | How will monitoring be undertaken? Is this outlined in the Environmental Report and clear how this will be undertaken? | Monitoring is outlined in section 9 of the Environmental Report. It outlines what monitoring will be completed and who will be responsible for this. A lot of the text relates to work required at project level stage for implementation e.g EIA, HRA and related surveys. Reference made to SWS biodiversity action plan, but not shown links with SEA in this report? A number of the significant adverse effects related to catchment solutions, what monitoring relates to this to see if these effects are likely to happen? | Agreed – additional explanation has been provided in respect of the links between monitoring and existing plans such as the SWS Biodiversity Plan. |
| 14 | Have next steps/consultation process been fully outlined and is it clear how consultation responses will be taken into account? Are consultation procedures/timeframes appropriate? | Future consultation plans set out in Environmental Report and how changes to the final plan will be communicated. Reference to post adoption statement which will outline how consultation responses will be/have been taken into account. Timeframes for consultation are not however specified. | Additional text included to reflect preparation and implementation of the draft WRMP – recorded in the NTS, Section 1.7.2 and Section 9.1 |
| 15 | Has a non technical summary been produced and does it cover the relevant aspects of the Environmental Report? | A Non technical summary is provided with the Environmental Report covering the relevant aspects of the Environmental Report. | Agreed – no further action required. |

Appendix D Review of Plans, Policies and Programmes

International/European

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|---|
| Ramsar Convention - The Convention on Wetlands of International Importance (1971) | |
| <p>The Convention on Wetlands of International Importance (Ramsar, Iran, 1971) (the "Ramsar Convention") is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories.</p> | <p>The impacts of the WRMP24 options on important wetland habitats must be considered as part of the SEA.</p> |
| UNESCO (1972) Convention Concerning the Protection of the World Cultural and Natural Heritage | |
| <p>The Convention defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List. In addition to this, countries are required to:</p> <ul style="list-style-type: none"> • Ensure that measures are taken for the protection, conservation and presentation of cultural and natural heritage • Adopt a general policy that gives cultural and natural heritage a function in the life of the community • Integrate the protection of heritage into comprehensive planning programmes | <p>The WRMP should seek to protect cultural heritage sites.</p> <p>The SEA assessment framework should include an objective on heritage and archaeological issues.</p> |
| Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) | |
| <p>The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) was adopted in Bern, Switzerland in 1979, and came into force in 1982. The principal objectives are:</p> <ul style="list-style-type: none"> • To conserve wild flora and fauna and their natural habitats, especially those species and habitats whose conservation requires the co-operation of several States; • To promote such co-operation. Particular emphasis is given to endangered and vulnerable species, including endangered and vulnerable migratory species; • In order to achieve this the Convention imposes legal obligations on contracting parties, protecting | <p>The WRMP should take into account the habitats and species that have been identified under the Convention, and should include provision for the preservation, protection and improvement of the quality of the environment as appropriate.</p> <p>The SEA assessment framework should incorporate the conservation provisions of the Convention particularly the protection of wild flora, fauna and natural habitats.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>over 500 wild plant species and more than 1000 wild animal species.</p> <p>Targets for Contracting Parties are:</p> <ul style="list-style-type: none"> Promoting national policies for the conservation of wild flora, wild fauna and natural habitats, with particular attention to endangered and vulnerable species, especially endemic ones, and endangered habitats, in accordance with the provisions of this Convention; Undertaking in its planning and development policies, and in its measures against pollution, to have regard to the conservation of wild flora and fauna; <p>Promoting education and disseminating general information on the need to conserve species of wild flora and fauna and their habitats.</p> | |
| <p>Directive on the Conservation of Wild Birds (79/409/EEC) (as amended)</p> | |
| <p>The Directive provides a framework for the conservation and management of, and human interactions with, wild birds in Europe. The main provisions of the Directive include:</p> <ul style="list-style-type: none"> The maintenance of the populations of all wild bird species across their natural range (Article 2) with the encouragement of various activities to that end (Article 3). The identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex I of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance (Article 4). (Together with Special Areas of Conservation designated under the Habitats Directive, SPAs form a network of European protected areas known as Natura 2000). The establishment of a general scheme of protection for all wild birds (Article 5). Restrictions on the sale and keeping of wild birds (Article 6). Specification of the conditions under which hunting and falconry can be undertaken (Article 7). (Huntable species are listed on Annex II of the Directive). Prohibition of large-scale non-selective means of bird killing (Article 8). Procedures under which Member States may derogate from the provisions of Articles 5-8 (Article 9) — that is, the conditions under which | <p>The WRMP should seek to protect and enhance biodiversity, particularly designated sites. The SEA assessment framework should include objectives, indicators and targets that cover biodiversity.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>permission may be given for otherwise prohibited activities.</p> <ul style="list-style-type: none"> • Encouragement of certain forms of relevant research (Article 10 and Annex V). <p>Requirements to ensure that introduction of non-native birds do not threatened other biodiversity (Article 11).</p> | |
| <p>Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983)</p> | |
| <p>The Convention on the Conservation of Migratory Species of Wild Animals (also known as the Bonn Convention or CMS) is an intergovernmental treaty under the United Nations Environment Programme. The convention was signed in 1979 ratified in the UK in 1985.</p> <p>The convention aims to ensure contracting parties work together to conserve terrestrial, marine and avian migratory species and their habitats (on a global scale) by providing strict protection for endangered migratory species.</p> <p>Overarching objectives set for the Parties are:</p> <ul style="list-style-type: none"> • Should promote, co-operate in and support research relating to migratory species; • Shall endeavour to provide immediate protection for migratory species; • Shall endeavour to conclude Agreements covering the conservation and management of migratory species included in Appendix II. <p>Setting targets is the responsibility of member states.</p> | <p>The WRMP should take into account the habitats and species that have been identified under this directive, and should include provision for their protection, preservation and improvement.</p> <p>The SEA assessment framework should include biodiversity, incorporating the importance of conserving migratory species.</p> |
| <p>The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1985)</p> | |
| <p>This sets the framework for the approach to conservation across Europe.</p> | <p>The SEA should take into account the need to conserve heritage</p> |
| <p>The Nitrates Directive (91/676/EEC)</p> | |
| <p>This 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.</p> | <p>This 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.</p> |
| <p>Urban Wastewater Treatment Directive (91/271/EEC)</p> | |
| <p>The aim of the Urban Waste Water Directive is to protect the environment from the adverse effects of waste water discharges. It sets out guidelines and legislation for the collection, treatment and discharge of urban waste water.</p> | <p>The WRMP will need to reflect the guidelines and legislation set out in the</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>The Directive was adopted by member states in May 1991 and is transposed into law in England and Wales by The Urban Waste Water Treatment (England & Wales) Regulations 1994 (as amended*). The Regulations require that all significant discharges are treated to at least secondary treatment. They also set standards and deadlines for the provision of sewage systems, the treatment of sewage according to the size of the community served by the sewage treatment works and the sensitivity of receiving waters to their discharges.</p> | <p>directive. The SEA assessment framework should include water quality.</p> |
| <p>Convention on Biological Diversity (1992)</p> | |
| <p>The main objectives are: Conservation of biological diversity; Sustainable use of its components; and Fair and equitable sharing of benefits arising from genetic resources.</p> | <p>The commitment to conserving biological diversity must be considered in any WRMP24 options and the SEA should seek to promote the protection and enhancement of biodiversity.</p> |
| <p>European Commission (1992) The Habitats Directive 1992/43/EEC</p> | |
| <p>The Habitats Directive seeks to conserve natural habitats. Conservation of natural habitats requires member states to identify special areas of conservation and to maintain where necessary landscape features of importance to wildlife and flora. It is required that each Member State propose a list of sites indicating which natural habitat types and which species the sites host. The information would include a map of the site, its name, location and its extent. The Commission will then establish, in agreement with each Member State, a draft list of sites of Community importance drawn from the Member States' lists identifying those which host one or more priority natural habitat types or priority species.</p> | <p>The WRMP should take into account the habitats and species that have been identified under this Directive, and include provision for the preservation, protection and improvement of the quality of the environment as appropriate.</p> <p>The SEA assessment framework should incorporate sites protected for their nature conservation importance.</p> |
| <p>The European Convention on the Protection of Archaeological Heritage (Valletta Convention) (1992)</p> | |
| <p>The Valletta Convention is one of a series of Conventions for the protection of the cultural heritage produced by the Council of Europe over the last fifty years.</p> | <p>The SEA should take into account the need to conserve heritage.</p> |
| <p>Kyoto Protocol to the UN Framework Convention on Climate Change (1997)</p> | |
| <p>The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. It is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding</p> | <p>The WRMP should aim to reduce greenhouse gas emissions. The SEA assessment framework should include objectives/guide questions related to reducing greenhouse gas emissions.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>targets for industrialized countries for reducing greenhouse gas (GHG) emissions. These amounted to an average of five per cent against 1990 levels in the first commitment period (2008 to 2012). The Protocol is planned to be extended to 2020 (the Kyoto second commitment period), pending ratification of the Doha Agreement.</p> | |
| <p>Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)</p> | |
| <p>The Aarhus Convention grants the public rights regarding access to information, public participation and access to justice, in governmental decision-making processes on matters concerning the local, national and transboundary environment. It focuses on interactions between the public and public authorities. The Aarhus Convention has been ratified by the European Community, which has begun applying Aarhus-type principles in its legislation, notably the Water Framework Directive (Directive 2000/60/EC). The Convention is designed to improve the way ordinary people engage with government and decision-makers on environmental matters. It helps to ensure that environmental information is easy to get hold of and easy to understand.</p> | <p>The SEA should seek to provide easily understood information to the public on the environmental implications of the WRMP24 and its constituent options.</p> |
| <p>Drinking Water Directive (1998/83/EC)</p> | |
| <p>The objective of the Drinking Water Directive is to protect the health of the consumers in the European Union and to make sure the water is clean and of good quality. To make sure drinking water everywhere in the EU is healthy, clean and tasty, the Drinking Water Directive sets standards for the most common substances (so-called parameters) that can be found in drinking water. A total of 48 microbiological and chemical parameters must be monitored and tested regularly. The Directive was implemented in relation to public water supplies by the Water Supply (Water Quality) Regulations 2000, as amended.</p> | <p>The SEA should seek to ensure that objectives address water quality in the region, particularly drinking water quality</p> |
| <p>The Water Framework Directive (WFD) (2000/60/EC)</p> | |
| <p>This Directive establishes a framework for the protection of inland surface waters, transitional waters, coastal water and groundwater. It also encourages the sustainable use of water resources. Key objectives are general protection of the aquatic ecology, specific protection of unique and valuable habitats, protection of drinking water resources, and protection of bathing water.</p> | <p>The SEA should seek to promote the protection and enhancement of all water resources</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| The SEA Directive (Directive 2001/42/EC) | |
| <p>The objective 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 and programmes with a view of contributing towards sustainable development”. Throughout the course of the development of the plan, policy or programme, the aim of SEA is to identify the potential impact of options proposed in the plan in terms of their environmental, economic and social effects. If any adverse effects are identified, these options can then be avoided or proposals modified to manage or mitigate adverse effects.</p> | <p>This directive is the driver for SEA. All topics identified in the SEA Directive should be considered within the scope of the assessment. Need to ensure that the subsequent Environmental Report meets the requirements of Annex I of the SEA Directive.</p> |
| Commitments arising from the World Summit on Sustainable Development, Johannesburg (2002) | |
| <p>The World Summit on Sustainable Development proposed broad-scale principles which should underlie sustainable development and growth. It included objectives such as: Greater resource efficiency; Work on waste and producer responsibility; New technology development; Push on energy efficiency; Integrated water management plans needed; and Minimise significant adverse effects on human health and the environment from chemicals by 2020.</p> | <p>These commitments are the highest level definitions of sustainable development. The WRMP24 should be influenced strongly by all of these themes and should seek to take its aims into account. The SEA should seek to promote the achievement of the sustainable development objectives outlined in this plan.</p> |
| The Environmental Noise Directive (2002/49/EC) | |
| <p>The END aims to define a common approach intended to avoid, prevent or reduce on a prioritised basis the harmful effects, including annoyance, due to the exposure to environmental noise. It also aims to provide the basis for developing EU measures to reduce noise emitted by major sources, in particular road and rail vehicles and infrastructure, aircraft, outdoor and industrial equipment and mobile machinery.</p> | <p>The SEA assessment framework should include for the protection against excessive noise.</p> |
| European Soils Charter (2003) | |
| <p>Sets out common principles for protecting soils across the EU.</p> | <p>The SEA should seek to ensure that the quality of the regions land, including soils, is protected or enhanced.</p> |
| European Commission Environmental Liability Directive (2004/35/EC) | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| The Directive establishes a framework for environmental liability based on the "polluter pays" principle, with a view to preventing and remedying environmental damage. | The SEA should take account of direct or indirect damage to the aquatic environment or contamination of land that creates a significant risk to human health. |
| Thematic Strategy on Air Pollution (2005) | |
| This strategy supplements current legislation. It sets out objectives for air pollution and proposes measures for achieving them by 2020. | The SEA should take account of the need to reduce air pollution through the SEA objectives |
| 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) | |
| The Directive establishes: Animal health requirements for the placing on the market, importation and transit of aquaculture animals and their products; Minimum measures to prevent diseases in aquaculture animals; and Minimum measures to be taken in response to suspected or established cases of certain diseases in aquatic animals. | The SEA should seek to maintain or enhance the quality of habitats and biodiversity. |
| Fresh Water Fish Directive (2006/44/EC) | |
| The Directive seeks to protect those fresh water bodies identified by Member States as waters suitable for sustaining fish populations. For those waters, it sets physical and chemical water quality objectives for salmonid waters and cyprinid waters. The Directive is designed to protect and improve the quality of rivers and lakes to encourage healthy fish populations. | The SEA should take account of the need to promote the protection of river and lake water quality in order to maintain and develop suitable environments that will sustain freshwater fish populations. |
| Groundwater Directive (2006/118/EC) | |
| This Directive establishes specific measures as provided for in Article 17(1) and (2) of Directive 2000/60/EC (Water Framework Directive) in order to prevent and control groundwater pollution. This Directive is designed to prevent and combat groundwater pollution. | The SEA should take account of the need to maintain, protect and improve water quality across the WRMP area. |
| The European Landscape Convention (2006) | |
| European Landscape Convention (ELC) is the first international convention to focus specifically on landscape. Natural England implements the European Landscape Convention in England. The aims of the 2009/10 action plan are: Lead on improving the protection, planning and management of all England's landscapes; Raise the | The implementation of the WRMP24 may influence landscape or the enjoyment of landscapes in the Southern Water area and as such the SEA should seek to maintain or enhance the quality of the regions |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| quality, influence and effectiveness of policy and practical instruments; Increase the engagement in and enjoyment of landscapes by the public; and Collaborate with partners across the UK and Europe. | landscapes and the potential enjoyment of these landscapes. |
| Thematic Strategy for Soil Protection (2006) | |
| The Thematic Strategy for Soil Protection consists of a Communication from the Commission to the other European Institutions, a proposal for a framework Directive (a European law), and an Impact Assessment. | The SEA assessment framework should include soils. |
| Directive on the Assessment and Management of Flood Risks (2007/60/EC) | |
| The Directive's aim is to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity. The Directive shall be carried out in coordination with the Water Framework Directive, notably by flood risk management plans and river basin management plans being coordinated, and through coordination of the public participation procedures in the preparation of these plans. | The WRMP should take account of the flood risk management plans. The SEA assessment framework should include flood risk. |
| Establishing measures for the recovery of the stock of European eel 2007 (1100/2007) | |
| This regulation provides a framework for the protection and sustainable use of the stock of European eel in Community waters, coastal lagoons, estuaries, rivers and communicating inland waters of member States that flow into specific seas. | The SEA should take account of the need to protect European eel. |
| Ambient Air Quality Directive (2008/50/EC) | |
| The 2008 ambient air quality directive (2008/50/EC) sets legally binding limits for concentrations in outdoor air of major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO2). As well as having direct effects, these pollutants can combine in the atmosphere to form ozone, a harmful air pollutant (and potent greenhouse gas) which can be transported great distances by weather systems. | The implementation of the WRMP24 may have some influence on air quality, either directly or indirectly through construction or operation activities. The SEA should seek to ensure that the region's air quality is maintained or enhanced, and that emissions of air pollutants are kept to a minimum |
| Marine Strategy Framework Directive (2008/56/EEC) | |
| The Marine Strategy Framework Directive aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and to protect the resource base upon which mariner-related economic and social activities | The SEA should seek to maintain, protect and improve the marine environment across the region. |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>depend. It is the first EU legislative instrument related to the protection of marine biodiversity, as it contains the explicit regulatory objective that "biodiversity is maintained by 2020", as the cornerstone for achieving GES.</p> | |
| <p>Defra (2011) Mainstreaming Sustainable Development</p> | |
| <p>This document sets out the Government's vision for mainstreaming sustainable development in relation to the operation of its buildings and estates, including the goods and services that it buys and the policies it makes. It builds on the principles that underpinned the UK's 2005 sustainable development strategy, and highlights that long term economic growth relies on protecting and enhancing the environmental resources that underpin it, and paying due regard to social needs.</p> <p>It sets out measures to achieve the mainstreaming of sustainable development, which include ministerial leadership and oversight; leading by example; embedding sustainable development in government policy; and transparency and independent scrutiny.</p> | <p>The WRMP should seek to be aligned with the principles of sustainable development.</p> <p>The SEA assessment framework should include objectives relating to the principles of sustainable development, including communities, economy and environment.</p> |
| <p>Promotion of the use of energy and renewable sources Directive (2009/28/EC)</p> | |
| <p>This promotes the use of energy from renewable sources.</p> | <p>The SEA should seek to promote the use of renewable energy.</p> |
| <p>European Commission (2011) The EU Biodiversity Strategy to 2020</p> | |
| <p>The Directive seeks to: Halt the loss of biodiversity and ecosystem services in the EU; and help stop global biodiversity loss by 2020.</p> | <p>The implementation of the WRMP24 may influence biodiversity in the Southern Water District and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.</p> |
| <p>United Nations Framework Convention on Climate Change (UNFCCC) (2011) The Cancun Agreements</p> | |
| <p>The Cancun Agreements were a set of significant decisions by the international community to address the long-term challenge of climate change collectively and comprehensively over time, and to take concrete action immediately to speed up the global response to it.</p> <p>The agreements, reached on December 11 in Cancun, Mexico, at the 2010 United Nations Climate Change Conference, represented key steps forward in capturing plans to reduce</p> | <p>The WRMP should aim to reduce greenhouse gas emissions and support climate change mitigation and adaptation.</p> <p>The SEA assessment framework should include greenhouse gas emissions and climate change.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>greenhouse gas emissions, and to help developing nations protect themselves from climate impacts and build their own sustainable futures.</p> <p>The Cancun Agreements' main objectives cover:</p> <ul style="list-style-type: none"> • Mitigation • Transparency of actions • Technology • Finance • Adaptation • Forests • Capacity building | |
| <p>Blueprint to Safeguard Europe's Water Resources (2012)</p> | |
| <p>This strategy aims to ensure that enough good quality water is available to meet the needs of people, the economy and the environment. The strategy includes: Improving implementation of current EU water policy; Increasing the integration of water policy objectives into other relevant policy areas such as agriculture, fisheries, renewable energy, transport and the Cohesion and Structural Funds; and Filling the gaps of the current framework, particularly in relation to the tools needed to increase water efficiency.</p> | <p>The commitment to conserving biological diversity must be considered in any WRMP24 options and the SEA should seek to promote the protection and enhancement of biodiversity</p> |
| <p>Energy Act 2013</p> | |
| <p>This provides the legislative framework for delivering secure, affordable and low carbon energy.</p> | <p>The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p> |
| <p>Directive on Bathing Water (76/160/EEC); and Directive 2006/7/EC repealing Directive 76/160/EEC (from 2014)</p> | |
| <p>The revised Bathing Water Directive (BWD) of 2006 updated and simplified the rules of the previous BWD. States are required to monitor and assess the bathing water for at least two parameters of (faecal) bacteria. In addition, they must inform the public about bathing water quality and beach management, through the so-called bathing water profiles. These profiles contain for instance information on the kind of pollution and sources that affect the quality of the bathing water and are a risk to bathers' health (such as waste water discharges).</p> | <p>The SEA should seek to maintain, protect and improve water quality across the region.</p> |
| <p>Paris Agreement (2015)</p> | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|---|
| Commitment to cut carbon emissions which came into force in November 2016. | The SEA should refer to the need to reduce carbon emissions. |
| The Water Resources Planning Guideline (2021) | |
| <p>The water resources planning guideline provides an update to the framework for water companies to follow in developing and presenting their water resources plans. It sets out good practice behind the composition of a plan, the approaches to developing a plan and the information that a plan should contain.</p> <p>The guideline states that where feasible water and sewerage companies should ensure that their long term planning for wastewater and water supply are aligned. Along with highlighting any linkages and, or interdependencies (or both). The guideline states that water/sewerage companies should consider alignment in their growth forecasts, climate change scenarios and timetable for delivering solutions.</p> | <p>The WRMP should align with the WRMP as suggested in the guideline.</p> <p>The SEA should seek to ensure that water supplies and resources are maintained or enhanced in line with the Water Resources Planning Guidelines.</p> |

National

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| Salmon and Freshwater Fisheries Act 1975 | |
| <p>The Act lays down the present basic legal framework within which salmon and freshwater fisheries in England are regulated. Proposals have been made to extend the legislation to apply to more fish species e.g. coarse fish, eel and lamprey species. These proposals are currently under review. The Act covers legislation on fishing methods and related offences, obstructions to fish passage, salmon and freshwater fisheries administration and law enforcement. Proposed extensions to the legislation (under review) include the provision of fish passes and screening of water abstraction and discharge points for coarse fish, eel and lamprey species.</p> | <p>The Act Provides statutory requirements for maintaining fish passage. The SEA will cover fish passage as an element of at least one sustainability objective. The SEA should seek to address any potential issues or effects on existing measures to address fish passage.</p> |
| The Ancient Monuments and Archaeological Areas Act 1979 | |
| <p>This act addresses the protection of scheduled monuments including the control of works affecting scheduled monuments. It also addresses archaeological areas.</p> | <p>The WRMP24 and SEA should take account of the need to protect scheduled monuments and archaeological areas.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|--|
| The Wildlife and Countryside Act 1981 (as amended) | |
| The Act is the principle mechanism for providing legislative protection of wildlife in Great Britain. Species listed in Schedule 5 of the Act are protected from disturbance, injury, intentional destruction or sale. Other provisions outlaw certain methods of taking or killing listed species. This Act is brought up to date regularly to ensure the most endangered animals are on the schedule. The Act also improved protection for the most important wildlife habitats | Some aspects of the WRMP24 may have effects on habitats and species in the southern area supply area and beyond. The SEA should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species and habitats. |
| Environmental Protection Act 1990 | |
| This act addresses pollution control, waste (including duty of care), contaminated land, statutory nuisance and clean air | The WRMP24 and actions arising from it such as construction activities must comply with this act. |
| Planning (Listed Buildings and Conservation Areas) Act 1990 | |
| This addresses listed buildings including prevention of deterioration and damage and preservation and enhancement of conservation areas. | The WRMP24 and SEA should take account of the need to protect listed buildings and conservation areas. |
| Water Industry Act 1991 | |
| This makes provision for general duties of water undertakers including those associated with water resources management plans and sets out supply duties. | The WRMP24 must take into account this legislation. |
| Water Resources Act 1991 | |
| The Water Resources Act applies to England and Wales and established the National Rivers Authority (now the Environment Agency) to regulate water pollution, water resources, flood defence, fisheries and navigation. The Act covers water abstraction and impounding and discharges to surface and ground waters and coastal waters. | The WRMP must ensure full compliance with the Act |
| Environment Act 1995 | |
| The Environment Act set up the EA to manage resources and protect the environment in England and Wales | The SEA should seek to promote the protection and enhancement of all water resources without having negative effects on other aspects of the Environment. |
| Countryside and Rights of Way (CROW) Act 2000 | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|---|
| <p>The Act provides for increased public access to the countryside and strengthens protection for wildlife. The main provisions of the Act are as follows: Extends the public's ability to enjoy the countryside whilst also providing safeguards for landowners and occupiers; Creates new statutory right of access to open country and registered common Land Use Consultants; Modernises Right of Way system; Gives greater protection to SSSIs; Provides better management arrangements for AONBs; and Strengthens wildlife enforcement legislation.</p> | <p>The WRMP24 may have an effect on public access to the countryside. The SEA should include objectives that take into account public access, protection of SSSIs and the management of relevant landscape designations.</p> |
| <p>Water Act 2003 (as amended)</p> | |
| <p>The Water Act 2003 is in three Parts, relating to water resources, regulation of the water industry and other provisions. The four broad aims of the Act are: The sustainable use of water resources; Strengthening the voice of consumers; A measured increase in competition; and The promotion of water conservation.</p> | <p>The implementation of the WRMP24 may have an effect through its role in maintaining supplies of water. The SEA should seek to promote sustainable use of water resources.</p> |
| <p>Securing the Future – Delivering the UK Sustainable Development Strategy (2005)</p> | |
| <p>The strategy for sustainable development aims to enable all people to satisfy their basic needs and enjoy a better quality of life without compromising the quality of life of future generations. The strategy places a focus on protecting natural resources and enhancing the environment.</p> | <p>The SEA must seek to ensure that objectives relating to sustainable development, sustainable resource use and protecting the natural environment, are considered when assessing the potential impacts of the WRMP24.</p> |
| <p>The Natural Environment and Rural Communities Act 2006 (NERC Act)</p> | |
| <p>This Act makes provision about bodies concerned with the natural environment and rural communities in connection with wildlife, sites of special scientific interest, National Parks and the Broads. The Natural Environment and Rural Communities Act is designed to help achieve a rich and diverse natural environment and thriving rural communities.</p> | <p>The SEA should seek to maintain or enhance the quality of habitats and biodiversity. The impacts of the WRMP24 on any designated features, as highlighted in the Natural Environment and Rural Communities Act, should be addressed.</p> |
| <p>The Water Resources Management Plan Regulations 2007</p> | |
| <p>This provides the legislation for the preparation of water resources management plans.</p> | <p>The WRMP24 should take account of these requirements.</p> |
| <p>Climate Change Act 2008</p> | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>This act sets carbon targets for 2050. The net carbon account for 2050 at least 80% lower than 1990 baseline.</p> | <p>This target needs to be taken into account by the SEA.</p> |
| <p>Climate Change and the Historic Environment, English Heritage (2008)</p> | |
| <p>Sets out the current thinking on the implications of climate change for the historic environment. It is intended both for the heritage sector and also for those involved in the wider scientific and technical aspects of climate change; in the development of strategies and plans relating to the impact of climate change; or in projects relating to risk assessment, adaptation and mitigation.</p> | <p>The SEA should seek to assess the implications of the WRMP24 in combination with climate change and the potential impacts on heritage and the historic environment.</p> |
| <p>Planning Act 2008</p> | |
| <p>This Act introduced a new system for nationally significant infrastructure planning, alongside further reforms to the Town and Country Planning system.</p> | <p>The WRMP should consider any unforeseen NSIP proposals that come forward prior to adoption which may affect water resources in the region.</p> <p>The SEA should consider the cumulative effects of the WRMP and any unforeseen NSIP proposals that come forward which may affect water resources in the region.</p> |
| <p>Marine and Coastal Access Act (2009)</p> | |
| <p>This Act allows for the creation of Marine Conservation Zones (MCZs). MCZs protect a range of nationally important marine wildlife, habitats, geology and geomorphology, and can be designated anywhere in English and Welsh territorial and UK offshore waters.</p> | <p>The WRMP24 may have an effect on the marine environment. The SEA should assess the effects on designated features of relevant MCZs and Recommended MCZs.</p> |
| <p>Safeguarding our Soils - A strategy for England, Defra (2009)</p> | |
| <p>The Soil Strategy for England – Safeguarding our Soils – outlines the Government’s approach to safeguarding our soils for the long term. It provides a clear vision to guide future policy development across a range of areas and sets out the practical steps that we need to take to prevent further degradation of our soils, enhance, restore and ensure their resilience, and improve our understanding of the threats to soil and best practice in responding to them. The Governments vision is that: By 2030, all England’s soils will be managed sustainably and degradation threats tackled successfully. This will improve the quality of England’s soils and safeguard their ability to provide essential services for future generations.</p> | <p>The SEA should seek to ensure that the quality of the regions soils and their management is protected or enhanced.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| The Eels (England & Wales) Regulations 2009 (as amended) | |
| Implement European Council Regulations 1100/2007 establishing measures for the recovery of the stock of European eel. The Regulations will help implement delivery Eel Management Plans. They address eel records and re-stocking, close season and reduction of fishing effort, passage of eels and entrainment. The key objective is to ensure that at least 40% of the potential production of silver eels returns to the sea to spawn. This will be achieved by reducing exploitation of all life-stages of the eel and restoration of their habitats. | The SEA should seek to should seek to maintain or enhance the quality of habitats and biodiversity, and take regard of protected species identified. This should include migratory fish species and their migratory passage. |
| Delivering a healthy natural environment. Ecosystem approach action plan, Defra (2010) | |
| Addresses the Government's approach to valuing economic and social benefits of a healthy natural environment while continuing to recognise nature's intrinsic value. It describes the vision of the Government for this to be the first generation to leave the natural environment of England in a better state than it inherited, requiring placing the value of nature at the heart of decision-making – in Government, local communities and businesses. Approaches to mainstream the value of nature across society include: Facilitating greater local action to protect and improve nature; Creating a green economy, in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature; Strengthening the connections between people and nature to the benefit of both; and Showing leadership in the European Union and internationally, to protect and enhance natural assets globally. | Ecosystem services may include: Provisioning Services: Biodiversity Regulating Services: Water Regulation Cultural services: Recreation and ecotourism Cultural services: Cultural heritage values Cultural services: Aesthetic. The SEA should ensure the WRMP24 meets provisioning services in the least damaging way through WRMP24 options. |
| Flood and Water Management Act 2010 | |
| The Flood and Water Management Act 2010 aims to provide better, more comprehensive management of flood risk for people, homes and businesses. It aims improve efficiency in the water industry, improve the affordability of water bills for certain groups and individuals, and help ensure continuity of water supplies to the consumer. | The WRMP24 also aims to ensure continuity of water supplies across the region are maintained. |
| Making Space for Nature - A review of England's Wildlife Sites and Ecological Network (2010) | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>This independent review of England’s wildlife sites and the connections between them sets objectives and recommendations to help achieve a healthy natural environment that will allow our plants and animals to thrive.</p> | <p>The SEA should seek to maintain or enhance the quality of habitats and biodiversity.</p> |
| <p>Biodiversity 2020: A strategy for England's wildlife and ecosystem services, Defra (2011)</p> | |
| <p>The objective for the next decade is: ‘to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people.’ Four action areas are: A more integrated large-scale approach to conservation on land and at sea; Putting people at the heart of biodiversity policy; Reducing environmental pressures; and Improving our knowledge.</p> | <p>The SEA must consider impacts on biodiversity. The implementation of the WRMP24 may influence biodiversity in the area and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity, and have due regard to priority species.</p> |
| <p>The Natural Choice: Securing the Value of Nature, Defra (2011)</p> | |
| <p>Addresses the Government’s approach to valuing economic and social benefits of a healthy natural environment while continuing to recognise nature’s intrinsic value. It describes the vision of the Government for this to be the first generation to leave the natural environment of England in a better state than it inherited, requiring placing the value of nature at the heart of decision-making – in Government, local communities and businesses. Approaches to mainstream the value of nature across society include: Facilitating greater local action to protect and improve nature; Creating a green economy, in which economic growth and the health of our natural resources sustain each other, and markets, business and Government better reflect the value of nature; Strengthening the connections between people and nature to the benefit of both; and Showing leadership in the European Union and internationally, to protect and enhance natural assets globally.</p> | <p>Ecosystem services may include: Provisioning Services: Biodiversity Regulating Services: Water Regulation Cultural services: Recreation and ecotourism Cultural services: Cultural heritage values Cultural services: Aesthetic. The SEA should ensure the WRMP24 meets provisioning services in the least damaging way through WRMP24 options.</p> |
| <p>Water for Life White Paper, Defra (2011)</p> | |
| <p>The Water White Paper described the Government’s intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry’s role as custodian of the natural environment. The Water White Paper and subsequent Defra strategic policy supports catchment-based approaches to prevent and manage future risks to drinking</p> | <p>The WRMP24 should take into account the contents of this paper.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>water quality from agricultural activities, working in partnership with farming communities. These policy objectives are reflected in regulatory guidance (WRPG) from Government and the regulators. The catchment-based approach has now been implemented across England, with catchment partnerships now in place across the river basin to take forward the approach over the coming years.</p> | |
| <p>UK Marine Policy Statement (2011)</p> | |
| <p>The Marine Policy Statement (MPS) sets out the framework for preparing Marine Plans and taking decisions affecting the marine environment, supporting the delivery of the following high-level marine objectives:</p> <ul style="list-style-type: none"> • Achieving a sustainable marine economy; • Ensuring a strong, healthy and just society; • Living within environmental limits; • Promoting good governance; • Using sound science responsibly. <p>Does not contain any targets.</p> | <p>The WRMP should take into account its effects on coastal areas.</p> <p>The SEA assessment should take into account the effects of the actions on the coast/marine environment where relevant.</p> |
| <p>National Policy Statement for Wastewater (2012)</p> | |
| <p>A framework document for planning decisions on nationally significant wastewater infrastructure.</p> | <p>The WRMP24 should take into account the contents of this paper.</p> |
| <p>UK Post-2010 Biodiversity Framework, Joint Nature Conservation Committee (JNCC) and Defra (2012)</p> | |
| <p>The UK Biodiversity Action Plan (UK BAP) was published in 1994 and was the UK government's response to the Convention on Biological Diversity. The UK BAP described the biological resources of the UK and provided detailed plans for conservation of these resources. Action plans for the most threatened species and habitats were set out to aid recovery, and national reports, produced every three-to five-years, showed how the UK BAP was contributing to the UK's progress towards the significant reduction of biodiversity loss. The 'UK Post-2010 Biodiversity Framework', published in July 2012, succeeds the UK BAP and 'Conserving Biodiversity – the UK Approach', and is the result of a change in strategic thinking following the publication of the Convention on Biological Diversity's (CBD) 'Strategic Plan for Biodiversity 2011–2020.</p> | <p>The commitment to conserving biological diversity must be considered in any WRMP24 options and the SEA should seek to promote the protection and enhancement of biodiversity.</p> |
| <p>UK National Ecosystem Assessment Follow-on (2014)</p> | |
| <p>Ecosystems services from natural capital contribute to the economic performance of the nation. Information and tools</p> | <p>For the purposes of the readership integrating an ecosystems services</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>to enable decision makers to understand the wider value of ecosystems and their associated services.</p> | <p>approach into the SEA is not being undertaken. However, it is realised that through the 'objective-led' approach, many of the services relevant to the WRMP24 can be considered through the objectives and key questions for example: Provisioning Services: Freshwater Provisioning Services: Biodiversity Regulating Services: Water Regulation Cultural services: Recreation and ecotourism Cultural services: Cultural heritage values Cultural services: Aesthetic The SEA should ensure the WRMP24 effects the related provisioning services in the least damaging way through informing the WRMP24 formulation and selection of WRMP24 options. In the event of further guidance being issued on incorporating ESA into SEA, the anticipated approach is sufficiently flexible that it should be able to accommodate this (subject to timing).</p> |
| <p>The Environmental Damage (Prevention and Remediation) (England) Regulations 2015</p> | |
| <p>These regulations amend the 2009 regulations and provide additional protection to habitats and species identified on Annexes 1 and 2 of the EC Habitats Directive (92/43/EEC), SSSIs and, in some cases, classified waterbodies from environmental damage where an operator has intended to cause damage or been negligent to the potential for damage. Applies to the most serious categories of environmental damage, including: Contamination of land that results in a significant risk of adverse effects on human health; Adverse effects on surface water or groundwater consistent with a deterioration in the water's status; Adverse effects on the integrity of a Site of Special Scientific Interest (SSSI) or on the conservation status of species and habitats protected by EU legislation outside SSSIs.</p> | <p>The SEA should seek to ensure that the guidance provided by the regulations is considered as WRMP24 options.</p> |
| <p>The Great Britain Invasive Non-Native Species Strategy, Defra (2015)</p> | |
| <p>The Strategy is intended to provide a strategic framework, updated from the 2008 framework, within which the actions of government departments, their related bodies and key stakeholders can be better co-ordinated. Its overall aim is to minimise the risks posed, and reduce the negative impacts caused, by invasive non-native species in Great Britain.</p> | <p>The implementation of the WRMP24 may influence biodiversity in the southern water area and the south east and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| Conservation 21 - Natural England's Conservation Strategy for the 21st Century, Natural England (2016) | |
| Conservation 21 sets out how Natural England will work to protect England's nature and landscapes for people to enjoy and for the services they provide, in support of Defra's ambitions for the environment. | The WRMP24 should take into account the contents of this strategy. |
| Managing Water Abstraction, Environment Agency (2013) | |
| <p>Managing Water Abstraction sets out how the EA manage water resources in England and Wales. It is the overarching document that links together the abstraction licensing strategies.</p> <p>The availability of water resources for abstraction is assessed through a Catchment Abstraction Management Strategy (CAMS) approach.</p> | The SEA should include a guide question relating to the sustainable use of water resources. |
| Historic England (2015) The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3 | |
| This document sets out guidance, against the background of the NPPF, on managing change within the settings of heritage assets, including archaeological remains and historic buildings, sites, areas, and landscapes. 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. | The WRMP24 and SEA should take account of the need to protect and enhance the setting of heritage assets |
| National Infrastructure Delivery Plan 2016–2021, Infrastructure and Projects Authority (HM Government) (2016) | |
| The Plan focuses on economic infrastructure: the networks and systems in energy, transport, digital communication, flood and coastal protection, water and waste management. These are all critical to support economic growth through the expansion of private sector businesses across all regions and industries, to enable competitiveness and to improve the quality of life of everyone in the UK. Objectives for the water and waste sector include to reduce average bills of about 5% in real terms, and plans for further expenditure from 2020 with the start of Asset Management Period 7. | The WRMP24 could result in the production of additional waste. The SEA should seek to reduce the production of waste and ensure it is treated in line with the widely adopted 'waste hierarchy' and not sent to landfill. The WRMP24 can contribute to the providing resilient water services. |
| Standing Advice on Protected Species, Natural England (2016) | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>This standing advice comprises a number of guides on the following protected species: Bats Great crested newts Badgers Hazel dormice Water voles Otters Wild birds Reptiles Protected plants White-clawed crayfish Invertebrates Freshwater fish Natterjack toads Ancient woodland and veteran trees</p> | <p>The SEA should seek to protect protected species and include this in the SEA objectives.</p> |
| <p>Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment, Historic England (2016)</p> | |
| <p>Guidance for addressing the historic environment in Strategic Environmental Assessment or Sustainability Appraisal. It identifies the recommended list of plans, programmes and policies for review, approach to baseline review, potential sustainability issues.</p> | <p>The SEA should consider the potential effects of the WRMP24 on the historic environment, particularly designated assets and their settings, and to important wetland areas with potential for paleo-environmental deposits. Historic characterisation can supplement information about designations. Sustainability issues, objectives and indicators identified in this document should be taken into account in the SEA.</p> |
| <p>Water Resources Planning Framework (2015-2065), Water UK (2016)</p> | |
| <p>The primary aim of the project is to develop a high level strategy and framework for the long term planning of water resources for Public Water Supply in England and Wales</p> | <p>The SEA should seek to promote the protection and enhancement of all water resources.</p> |
| <p>The Conservation of Habitats and Species Regulations (2017) (as amended)</p> | |
| <p>The Conservation of Habitats and Species Regulations 2017 are the principal means by which the Habitats Directive is transposed in England and Wales as such its main objective is to promote the maintenance of biodiversity.</p> | <p>The impacts of the WRMP24 on species diversity must be considered as part of the SEA.</p> |
| <p>The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (as amended)</p> | |
| <p>These Regulations make provision for the purpose of implementing in river basin districts within England and Wales The Water Framework Directive (2000/60/EC) of the European Parliament. The Regulations require a new strategic planning process to be established for the purposes of managing, protecting and improving the quality of water resources.</p> | <p>The SEA should seek to promote the protection and enhancement of all water resources. The SEA should seek to maintain, protect and improve water quality across the region and ensure efficient use of resources.</p> |
| <p>UK Climate Change Risk Assessment, Defra (2017)</p> | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>This report outlines the UK and Devolved Governments' views on the key climate change risks and opportunities that the UK faces. The report endorses the six priority risk areas identified in the independent evidence report by the Adaptation Sub-Committee: from flooding and coastal change; to health and well-being from high temperatures; due to water shortages; to natural capital; to food production and trade from pests and diseases and invasive non-native species. Specifically, the report sets out a series of challenges for the water industry. It states that: "Climate change is projected to reduce the amount of water in the environment that can be sustainably withdrawn whilst increasing the demand for irrigation during the driest months. At the same time the growing population will create additional demands on already stretched resources in some parts of the country."</p> | <p>The WRMP24 and SEA needs to take account of the key climate change adaptation risks and opportunities identified in relation to the water environment.</p> |
| <p>A Green Future: Our 25 Year Plan to Improve the Environment, UK Government (2018)</p> | |
| <p>The 25 Year Environment Plan sets out the Government's environmental plan of action over the next quarter century, in the context of Brexit. The Plan aims to tackle the growing problems of waste and soil degradation, improving social justice through tackling pollution and promoting the mental and physical health benefits of the natural world. It also sets out how the Government will address the effects of climate change. These aims are supported by a range of policies which are focused on the following six key areas: 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, and reducing pollution and waste; Securing clean, productive and biologically diverse seas and oceans; and Protecting and improving the global environment.</p> | <p>The SEA should seek to promote the achievement of the environmental objectives outlined in this plan.</p> |
| <p>Creating a better place: Our ambition to 2020, Environment Agency (2018)</p> | |
| <p>This sets out the EA's priorities for the environment to 2020, fully supporting the government's 25 year Environment Plan. The EA pledges to work to deliver all ten of the goals laid out in the Environment Plan.</p> | <p>The SEA should seek to ensure that relevant goals are also reflected in the SEA objectives particularly regarding the protection and improvement of water, land and biodiversity.</p> |
| <p>Defra and The Environment Agency (2018) Resources and waste strategy for England</p> | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>This white paper outlines a package of reforms so that by 2030 there will be a flexible, smart and responsive electricity system, powered by a range of low carbon sources of electricity. This includes engaging with consumers on energy use. Decarbonisation is important in meeting the 2050 targets.</p> | <p>The implementation of the WRMP24 may have an influence upon Southern Water's total energy use. The SEA should seek to promote energy efficiency, as well as seeking to reduce the effects of climate change through greenhouse gas emissions. The SEA should also promote the use of renewable energy, where relevant.</p> |
| <p>Environment Agency and Natural Resources Wales (2018) Water Resources Planning Guideline: Interim update</p> | |
| <p>Technical guidelines published jointly by the Welsh Government, NRW, Defra, Environment Agency and Ofwat for the 2019 Water Resource Management Plans for England and Wales.</p> <p>The water resources planning guideline provides a framework for water companies to follow in developing and presenting their water resources plans. It sets out good practice behind the composition of a plan, the approaches to developing a plan and the information that a plan should contain. Companies should follow this guideline to ensure that their plans cover the requirements specified by the Water Industry Act 1991.</p> | <p>The WRMP should consider the guideline, where relevant.</p> <p>The SEA should seek to ensure that water supplies and resources are maintained or enhanced in line with the Water Resources Planning Guidelines.</p> |
| <p>HM Government (2018) The Water Supply (Water Quality) Regulations 2018</p> | |
| <p>These regulations address the quality of water supplied by water undertakers, who supply areas mainly or wholly in England. The new Regulations implement Directive 98/83/EC on the quality of water intended for human consumption.</p> <p>Under these Regulations, water undertakers are required to identify the areas that are to be water supply zones on an annual basis. A water supply zone cannot exceed 100,000 in terms of population before the beginning of each year of the supply.</p> <p>The standards of wholesomeness are set out, in respect of water for human consumption, be that through drinking, washing, food preparation or cooking and food production. In order to qualify as wholesome, the water cannot contain any:</p> <ul style="list-style-type: none"> • micro-organism, other than those listed in the full text of Schedule 1 to the Regulations, or parasite; or • substances, other than those listed in the full text of Schedule 1 to the Regulations. | <p>The WRMP should consider the Regulations.</p> <p>The SEA should take into account potential effects of the measures on drinking water quality.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, Defra (2018)</p> | |
| <p>The National Adaptation Programme (NAP) sets the actions that government and others will take to adapt to the challenges of climate change in the UK. It sets out key actions for the next 5 years. Flooding and pressure on water services are considered to be cross cutting risks. The report also details how the third cycle of adaptation reporting will be managed, forming part of the five-yearly cycle of requirements laid down in the Climate Change Act 2008.</p> | <p>The SEA should consider the potential to include adaptive measures for climate change.</p> |
| <p>The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019)</p> | |
| <p>These regulations consolidate all the various amendments made to the Conservation (Natural Habitats) Regulations 1994 in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. Under the Regulations, competent authorities i.e. any Minister, government department, public body, or person holding public office, have a general duty, in the exercise of any of their functions, to have regard to the EC Habitats Directive. New provisions implement aspects of the Marine & Coastal Access Act 2009. These provisions provide for:</p> <ul style="list-style-type: none"> • the transfer of certain licensing functions from Natural England to the Marine Management Organisation (MMO); • Marine Enforcement Officers to use powers under the Marine Act to enforce certain offences under the Habitats Regulations. <p>The 2019 (EU Exit) amendment to the Regulations ensures that the habitat and species protection and standards derived from EU law will continue to apply after Brexit.</p> | <p>The WRMP must ensure full compliance with the Regulations. The SEA should take into account the effects of the actions on biodiversity.</p> |
| <p>The Invasive Alien Species (Enforcement and Permitting) Order 2019</p> | |
| <p>This Order allows for the enforcement of 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</p> | <p>The SEA should seek to address any potential issues or effects on existing measures to address invasive alien species.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| licenses, permits and rules for keeping invasive alien species. | |
| Meeting our future water needs: a national framework for water resources, Environment Agency (2020) | |
| <p>The national framework explores England’s long-term water needs for:</p> <ul style="list-style-type: none"> • public water supplies • agriculture • the power and industry sectors • environmental protection <p>It sets out the principles, expectations and challenges for 5 regional groups (made up of the 17 English water companies and other water users). These have been developed and agreed by the regional groups, other major water abstractors, government, regulators and stakeholders. The national framework considers the needs of the whole region and of other water users. It looks at how these needs fit with the national water picture and how we can provide the resilience and environmental protection needed.</p> | <p>The WRMP should seek to support the achievement of the aims of the framework.</p> <p>The SEA should include an objective/guide question relating to water resources.</p> |
| National Flood and Coastal Erosion Risk Management Strategy for England, Environment Agency (2020) | |
| <p>This strategy describes what needs to be done by all risk management authorities (RMAs) involved in flood and coastal erosion risk management for the benefit of people and places. They must exercise their flood and coastal erosion risk management (FCERM) activities, including plans and strategies, consistently with the strategy. Through its ‘strategic overview’ role the Environment Agency exercises its strategic leadership for all sources of flooding and coastal change. This strategy seeks to better manage the risks and consequences of flooding from all sources.</p> | <p>The WRMP24 and SEA should ensure relevant flood and coastal erosion risk considerations are integral to management decisions across the range of temporal and spatial scales.</p> |
| State of Natural Capital Annual Report 2020, Natural Capital Committee (2020) | |
| <p>The Natural Capital Committee is an independent advisory body to government. The report sets out the work carried out by the committee since March 2019; supporting a better understanding of England’s natural assets and the benefits obtained from nature. The report has helped to ensure that natural capital is integrated into government policy.</p> | <p>The SEA should take into consideration report findings and recommendations.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|---|
| National Planning Policy Framework (NPPF) (2021) | |
| <p>Presumption in favour of sustainable development. Core planning principles include taking account of the development needs of an area; contribute to conserving and enhancing the environment; re-use of previously developed land; conserve heritage assets; deliver sufficient community facilities to meet local needs. Delivering sustainable development includes: Building a strong competitive economy; Supporting a prosperous rural economy; Promoting sustainable transport; Requiring good design; Promoting healthy communities; Protecting green belt land; Meeting the challenge of climate change, flooding and coastal change; Conserving and enhancing the natural environment; Conserving and enhancing the historic environment; and Facilitating the sustainable use of minerals.</p> | <p>The WRMP24 and SEA should take account of the key components of sustainable development and consider the three dimensions to sustainable development: economic, social and environmental.</p> |
| Marine Plans – South East Inshore, South Inshore, South Offshore | |
| <p>The South West Marine Plan introduces a strategic approach to planning within the inshore and offshore waters between the River Severn border with Wales and the River Dart in Devon. It provides a clear, evidence-based approach to inform decision making by marine users and regulators on where activities might take place within the marine plan areas.</p> <p>The plan contains a series of 13 objectives, grouped under three broad headings, the application of which are supported by the policies of the plan:</p> <p>Achieving a sustainable marine economy</p> <ol style="list-style-type: none"> 1. Infrastructure is in place to support and promote safe, profitable and efficient marine businesses. 2. The marine environment and its resources are used to maximise sustainable activity, prosperity and opportunities for all, now and in the future. 3. Marine businesses are taking long-term strategic decisions and managing risks effectively. They are competitive and operating efficiently. 4. Marine businesses are acting in a way which respects environmental limits and is socially responsible. This is rewarded in the market place. <p>Ensuring a strong, healthy and just society</p> <ol style="list-style-type: none"> 5. People appreciate the diversity of the marine environment, its seascapes, its natural and cultural heritage and its resources and can act responsibly. | <p>The SEA assessment framework should, where relevant, contain objectives and guide questions that reflect the objectives of the plan. For example, the SEA assessment should include objectives relating to socio-economic wellbeing, human health, climate change, biodiversity, cultural heritage, landscape/seascape and water quality and quantity.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|--|
| <p>6. The use of the marine environment is benefiting society as a whole, contributing to resilient and cohesive communities that can adapt to coastal erosion and flood risk, as well as contributing to physical and mental wellbeing.</p> <p>7. The coast, seas, oceans and their resources are safe to use.</p> <p>8. The marine environment plays an important role in mitigating climate change.</p> <p>9. There is equitable access for those who want to use and enjoy the coast, seas and their wide range of resources and assets and recognition that for some island and peripheral communities the sea plays a significant role in their community.</p> <p>10. Use of the marine environment will recognise, and integrate with, defence priorities, including the strengthening of international peace and stability and the defence of the United Kingdom and its interests.</p> <p>Living within environmental limits</p> <p>11. Biodiversity is protected, conserved and, where appropriate, recovered, and loss has been halted.</p> <p>12. Healthy marine and coastal habitats occur across their natural range and are able to support strong, biodiverse biological communities and the functioning of healthy, resilient and adaptable marine ecosystems.</p> <p>13. Our oceans support viable populations of representative, rare, vulnerable, and valued species.</p> | |
| The Environment Act 2021 | |
| The Environment Act sets out how the UK will maintain environmental standards and build on the 25 Year Environment Plan. | The WRMP24 should seek to protect and enhance the natural environment, taking into consideration the principals and guidance set out through the Environment Bill |
| Water Resources Planning Guideline and Technical Supplementary Guidance, Environment Agency, OfWAT and Natural Resources Wales (2022) | |
| <p>Technical guidelines published jointly by the Welsh Government, NRW, Defra, Environment Agency and Ofwat for the 2019 Water Resource Management Plans for England and Wales.</p> <p>The water resources planning guideline provides a framework for water companies to follow in developing and presenting their water resources plans. It sets out good practice behind the composition of a plan, the approaches to developing a plan and the information that</p> | <p>The WRMP should consider the guideline, where relevant.</p> <p>The SEA should seek to ensure that water supplies and resources are maintained or enhanced in line with the Water Resources Planning Guidelines.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|---|
| a plan should contain. Companies should follow this guideline to ensure that their plans cover the requirements specified by the Water Industry Act 1991. | |

Regional/Local

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|---|
| Chichester Harbour AONB Management Plan 2019-2024 (Chichester Harbour Conservancy) | |
| The areas covered by the plan include the overall management of the AONB, sustainable development, landform and landscape character, biodiversity, farmed landscape, woodland and trees, historic and cultural heritage, heritage coast, geology and natural resources, vibrant communities and access, enjoyment and understanding. | The WRMP24 operation may have the potential to affect several of the objectives of the Chichester Harbour AONB. The SEA will include objectives that take into account the AONB objectives where relevant |
| Chiltern Hills AONB Management Plan 2014-2019 | |
| Objectives are under the headings of conserving and enhancing natural beauty, landscape, farming, forestry and other land management, biodiversity, water environment, historic environment and development. | The WRMP24 operation may have the potential to affect the broad aims and policies identified in the vision of the Chilterns AONB management plan. The SEA should include objectives that take into account the broad aims and policies important to the vision of the Chilterns AONB management plan where relevant (e.g. conserving river and wetland habitats.) |
| Cotswolds AONB Management Plan 2013-2018 | |
| Objectives include those associated with conserving and enhancing the AONB. | The WRMP24 operation may have the potential to affect several of the objectives for managing the Cotswolds AONB. The SEA should include objectives that take into account the objectives of the Cotswolds AONB management where relevant |
| Cranborne Chase AONB Management Plan 2019-2024 | |
| The plan determines strategies for conserving, protecting and educating about the AONB's history, environment and culture. Key focuses include the sustainable | The WRMP24 operation may have the potential to affect several of the objectives of the Cranborne Chase and West Wiltshire Downs AONB. The SEA will include |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|---|
| management of natural resources within the AONB, allowing free movement of wildlife. | objectives that take into account the AONB objectives where relevant. |
| Dorset AONB - A Framework for the Future AONB Management Plan 2019 – 2024 | |
| Provides local & spatial plans, catchment plans, marine plans, development management, rural investment strategies and community planning to guide and inform users and stakeholder on activities affecting the AONB. The plan emphasises the key concepts of Sustainable Development, Ecosystem Approach and Landscape Approach. | The WRMP24 operation may have the potential to affect several of the objectives of the Dorset AONB. The SEA will include objectives that take into account the AONB objectives where relevant. |
| Drought Plans from adjacent water companies | |
| <p>These include:</p> <ul style="list-style-type: none"> • Affinity Water • Portsmouth Water • South East Water • Sutton East Surrey Water • Bournemouth Water • Wessex Water • Thames Water | The WRMP24 and SEA to take these into account these plans in the cumulative effects assessment. |
| Environment Agency Catchment Abstraction Management Strategies (CAMS) | |
| <p>CAMS was the approach used by the Environment Agency to assess the amount of water available for further abstraction licensing taking account of the needs of the environment. The relevant Catchment Abstraction Management Strategies (CAMS) were last produced in 2013-14 and have now been incorporated into the WFD process since the 2nd cycle River Basin Management Plans in 2015. The aims of abstraction strategies are to:</p> <ul style="list-style-type: none"> • make information on water resource availability and the catchment licensing strategy more readily available | The WRMP24 could affect issues identified within in the individual CAMS within the area. The SEA will include objectives that ensure that the effect of the WRMP24 on the sustainable water abstraction assessed. |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|--|
| <ul style="list-style-type: none"> • provide a consistent and structured approach to local water resource management • recognise both the abstractor's reasonable need for water and environmental needs • provide mechanisms to assess water resources availability • provide results which ensure the relevant Water Framework Directive objectives are met • provide tools to aid licensing decisions – particularly management of time limited licences. | |
| Green infrastructure plans | |
| <p>The NPPF defines green infrastructure as 'a network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities' (including rivers and ponds). Local planning authorities are required to plan positively for strategic networks of green infrastructure, and take account of the benefits of green infrastructure in reducing the risks posed by climate change. The majority of LAs have therefore developed Green Infrastructure Strategies or Studies addressing these issues. Green infrastructure will often play a large part in local recreational resources.</p> | <p>The SEA should take account of the need to protect and enhance the green infrastructure network.</p> |
| Isle of Wight AONB Management Plan 2014 – 2019 (Wight AONB Partnership) | |
| <p>The areas covered by the plan include the overall management of the AONB, sustainable development, landform and landscape character, biodiversity, farmed landscape, woodland and trees, historic and cultural heritage, heritage coast, geology and natural resources, vibrant communities and access, enjoyment and understanding.</p> | <p>The WRMP24 operation may have the potential to affect several of the objectives of the Isle of Wight AONB. The SEA will include objectives that take into account the AONB objectives where relevant.</p> |
| Kent Downs AONB Management Plan 2014-2019 | |
| <p>The areas covered by the plan include the overall management of the AONB, sustainable development, landform and</p> | <p>The WRMP24 operation may have the potential to affect several of the objectives of the Kent Downs AONB. The</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|---|
| <p>landscape character, biodiversity, farmed landscape, woodland and trees, historic and cultural heritage, heritage coast, geology and natural resources, vibrant communities and access, enjoyment and understanding.</p> | <p>SEA will include objectives that take into account the AONB objectives where relevant.</p> |
| <p>Partnership Plan for the New Forest National Park 2021-2026</p> | |
| <p>Supplementing the National Park Management Plan, the Partnership Plan has five objectives:</p> <ol style="list-style-type: none"> 1. Nature Recovery – habitats are restored, expanded and maintained to enable wildlife to thrive, both within and around the National Park 2. Net Zero with Nature (NZWN) – significant cuts in land-based carbon emissions are secured through restoring natural habitats and carbon capture 3. Thriving Forest – a living, working Forest is sustained through support for cultural heritage, commoning, local produce, sustainable tourism, access to affordable homes and helping to attract high-value businesses and employees 4. An inclusive National Park– people within reach of the New Forest, of all backgrounds, abilities and socio-economic groups, value the National Park as an important part of their lives and seek to care for it 5. Team New Forest – communities, businesses and organisations work together as a team to deliver the vision of the Partnership Plan, sharing knowledge, ideas and resources to deliver the best for the Forest | <p>The WRMP24 may have the potential to affect the achievement of objectives. SEA will include objectives that take into account relevant aspects of the Partnership Plan’s objectives.</p> |
| <p>Public Rights of Way Improvement Plans (ROWIP)</p> | |
| <p>These plans are prepared by local authorities to describe how improvements to the public rights of way network will be undertaken to</p> | <p>The WRMP24 may affect public rights of way (PRoW) for example due to construction. The SEA should include an objective that protects PRoW.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|---|
| provide a better experience for a range of users. ROWIPs are reviewed every ten years | |
| RSPB Pagham Harbour Local Nature Reserve Management Plan 2013-2018 | |
| <p>This is a five-year strategy for the management of the RSPB's Pagham Harbour Local Nature Reserve. The purpose of the plan is maintain, improve and extend the important habitats within the area. The habitats support some of the most important wetland bird populations and wildlife in southern England. A key objective is to maintain its SPA and Ramsar status for Brent Geese, Black-tailed Godwits, Pintails and Little Terns.</p> | <p>The WRMP24 may have the potential to affect several of the ambitions for the Pagham Harbour Local Nature Reserve Management Plan. The SEA will include objectives that take into account the plan objectives where relevant.</p> |
| Surrey Hills AONB Management Plan 2020-2025 | |
| <p>The areas covered by the plan include the overall management of the AONB, sustainable development, landform and landscape character, biodiversity, farmed landscape, woodland and trees, historic and cultural heritage, heritage coast, geology and natural resources, vibrant communities and access, enjoyment and understanding.</p> | <p>The WRMP24 operation may have the potential to affect several of the objectives of the Surrey Hills AONB. The SEA will include objectives that take into account the AONB objectives where relevant.</p> |
| Surrey Wildlife Trust 5-year Plan 2018-2023 | |
| <p>This is the five year strategy for the management of the wildlife sites managed by Surrey Wildlife Trust. The purpose of the plan is to deliver: protection and accessibility of wildlife, its habitats and places of natural beauty; teaching the community about nature, biodiversity, wildlife conservation and sustainable development; and support research into natural heritage to promote evidence based activity.</p> | <p>The WRMP24 may have the potential to affect several of the ambitions for the Surrey Wildlife Trust Management Plan. The SEA will include objectives that take into account the plan objectives where relevant.</p> |
| The High Weald AONB Management Plan 2019-2024 | |
| <p>The areas covered by the plan include the overall management of the AONB, sustainable development, landform and landscape character, biodiversity, farmed landscape, woodland and trees, historic and</p> | <p>The WRMP24 operation may have the potential to affect several of the objectives of the High Weald AONB. The SEA will include objectives that take into account the AONB objectives where relevant.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|--|
| cultural heritage, heritage coast, geology and natural resources, vibrant communities and access, enjoyment and understanding. | |
| The North Wessex Downs AONB Management Plan 2014-19 | |
| The areas covered by the plan include the overall management of the AONB, sustainable development, landform and landscape character, biodiversity, farmed landscape, woodland and trees, historic and cultural heritage, heritage coast, geology and natural resources, vibrant communities and access, enjoyment and understanding | The WRMP24 operation may have the potential to affect several of the objectives of the North Wessex Downs AONB. The SEA will include objectives that take into account the AONB objectives where relevant. |
| Water Resources in the South East (WRSE) Group (forthcoming) regional water resources strategy | |
| The WRSE's group aim is to develop a regional water resources strategy to contain a range of options to determine the best long term solutions for customers and the environment of the south east of England. Once prepared and publicly available this will form the 'building blocks' of water companies' next set of WRMP24 s. | The WRMP24 and SEA should take account of this strategy subject to when it becomes available. |
| West Sussex County Council (2005), A Strategy for the West Sussex Landscape | |
| This strategy aims to enhance and protect the character and diversity of the West Sussex landscape. | The WRMP24 should take account of this plan. |
| Environment Agency (2007), Water for the Future - Managing Water in the South East of England | |
| A short paper explaining why water resources are going to become an increasingly important issue in the south east of England due to Government proposed development, climate change, available resources and usage patterns. Promotes consumer management of water resources by changing behaviour, and suggests this may preclude the need for some development schemes which have environmental impacts. Mentions a number | The WRMP24 should be aligned to these objectives where possible. For example, sharing of resource by water companies. |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|--|
| <p>of ways by which water companies can reduce water demand, including:</p> <ul style="list-style-type: none"> leakage reduction installation of water meters new tariffs to encourage efficient water use retrofitting water saving devices to existing homes and businesses, designing new homes to be water efficient sharing of resources by water companies | |
| <p>Environment Agency (2009), Water Resources Strategy. Regional Action Plan for Southern Region</p> | |
| <p>The vision of the plan is for more people in the South East to enjoy new and improved water related recreation contributing to a better quality of life, health and environment. The strategic priorities are designed to:</p> <ul style="list-style-type: none"> Encourage action by a range of interested parties and individuals; deliver well managed, new and better opportunities for more people to enjoy water environments; Tackle some of the issues that arise from changes in the demand for recreation, the supply of water bodies and gaps in provision; Ensure everyone can enjoy water environments. | <p>The WRMP24 may have the potential to affect the water environment in the South East, such as reducing river levels with potential impacts on recreation activities. The SEA should include objectives that take into account the maintenance of the water environment to ensure access, recreation and enjoyment.</p> |
| <p>South East Biodiversity Strategy (2009), South East England Biodiversity Forum Environment Agency (2010), Water Resources Strategy – A Regional Action Plan for Thames Region</p> | |
| <p>The strategy aims to be a clear, coherent and inspiring vision and framework that guides and supports all those who can impact biodiversity in the south east region. The South East Biodiversity Strategy aims to:</p> <ul style="list-style-type: none"> Be a clear, coherent and inspiring vision for the south east Provide a framework for the delivery of biodiversity targets that guide and support all those who have an impact on biodiversity in the region | <p>The implementation of the WRMP24 may influence biodiversity in the south east and as such the SEA should seek to maintain or enhance the quality of habitats and biodiversity.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|---|
| <ul style="list-style-type: none"> Embed a landscape scale approach to restoring whole ecosystems in the working practices and policies of all partners Create the space needed for wildlife to respond to climate change Enable all organisations in the south east to support and improve biodiversity across the region Be a core element within the strategies and delivery plans of organisations across the south east region. | |
| <p>Defra (2010), Eel Management plans for the United Kingdom South East River Basin District and Implementation of UK Eel Management Plans (2017–2020)</p> | |
| <p>The Eel Management Plan for the South East River Basin District (RBD) aims to describe the current status of eel populations, assess compliance with the target set out in Council Regulation No 1100/2007 and detail management measures to increase silver eel escapement.</p> | <p>The WRMP24 operation may have the potential to impact on fish and eel migration. The SEA will cover fish and eel passage as an element of at least one sustainability objective.</p> |
| <p>Environment Agency (2011), Water Resources Strategy – A Regional Action Plan for Thames Region</p> | |
| <p>The vision of the plan is for more people in London and the South East to enjoy new and improved water related recreation contributing to a better quality of life, health and environment. The strategic priorities are designed to:</p> <ul style="list-style-type: none"> Encourage action by a range of interested parties and individuals; deliver well managed, new and better opportunities for more people to enjoy water environments; Tackle some of the issues that arise from changes in the demand for recreation, the supply of water bodies and gaps in provision; Ensure everyone can enjoy water environments. | <p>The WRMP24 may have the potential to affect the water environment in London and the South East, such as reducing river levels with potential impacts on recreation activities. The SEA should include objectives that take into account the maintenance of the water environment to ensure access, recreation and enjoyment.</p> |
| <p>Environment Agency, The Wild Trout Trust and the Atlantic Salmon Trust South Coast Sea Trout Action Plan (2011)</p> | |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| <p>The Plan details a programme of work. Key actions are identified. Which include: Improve fish passage and habitat connectivity; Spawning habitat improvement; Protection of sea trout stocks; Protect and improve water resources and water quality; Mitigate the impact of climate change; Improve understanding of sea trout; Raise awareness</p> | <p>The WRMP24 operation may have the potential to impact on fish migration. The SEA will cover fish passage as an element of at least one sustainability objective</p> |
| <p>Mayor of London (2011), Securing London's Water Future The Mayor's Water Strategy</p> | |
| <p>This sets out the water challenges for London and actions needed to manage them. It calls for organisations involved in the city's water management</p> <ul style="list-style-type: none"> • to invest in a water management and sewerage infrastructure system that's suitable for a world class city • support and encourage people to take practical actions to save water, save energy and save money off utility bills • work in partnership to manage flood risk <p>Demand for water will increase due to population increases and higher seasonal rainfall and hotter summers mean water availability will decrease when required the most. London's supply-demand balance will become increasingly unsustainable and therefore action is required to balance supply and demand</p> | <p>The WRMP24 and SEA should take into account of the strategy and the need to balance water supply and demand whilst protecting the environment.</p> |
| <p>South Downs National Park (2013), Partnership Management Plan, Shaping the future of your south downs national park 2014-2019</p> | |
| <p>This is the five-year strategy for the management of the South Downs National Park. It provides a framework for the park wide local plan. Outcomes are under three headings: A thriving living landscape People connected with places Towards a sustainable future One of the outcomes comprises 'More responsibility and action is taken by visitors, residents and businesses to conserve and enhance the special qualities and use resources more wisely.</p> | <p>The WRMP24 may have the potential to affect the achievement of objectives. SEA will include objectives that take into account aspects such as landscape quality and character, historic and cultural features, habitats and biological diversity, climate change and better use of resources.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
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| Environment Agency (2015), South West River Basin District, River basin management plan | |
| The purpose is to provide a framework for protecting and enhancing the benefits provided by the water environment. The plan sets out the current state of the environment, environmental objectives and identifies the measures to achieve the environmental objectives | The WRMP24 may have an effect on some of the RBMP objectives. The SEA should include objectives that take into account the objectives of the RBMP. |
| Environment Agency and Defra (2015), South East River Basin District River Basin Management Plan | |
| Reference is made to the environmental objectives of the WFD are: To prevent deterioration of the status of surface waters and groundwater; To achieve objectives and standards for protected areas; To aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status; To reverse any significant and sustained upward trends in pollutant concentrations in groundwater; The cessation of discharges, emissions and losses of priority hazardous substances into surface waters; Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants. Environmental objectives are set for each of the protected areas and water bodies in the river basin district. | The WRMP24 may have an effect on some of the RBMP objectives. The SEA should include objectives that take into account the objectives of the RBMP where relevant (e.g. abstraction and WFD status). |
| Environment Agency (2016), South East River Basin District Flood Risk Management Plan 2015 – 2021 | |
| This plan puts into place measures for preventing flooding from rivers, the sea, surface water, ground water and reservoirs over the 9 catchments and 1 flood risk area of the South East river basin district. Working with local councils, internal drainage boards, Highways England and lead local flood authorities to prevent, prepare and protect from flood risks. | The SEA should avoid increasing any potential flood threats or effects. |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|--|
| Environment Agency (2016), South West River Basin district Flood Risk Management Plan | |
| <p>This sets out the measures to manage flood risk now and in the future. It will help to develop and promote a better understanding of flood and coastal erosion risk, provide information about the economic and environmental benefits to inform decision makers and identify communities with the highest risk of flooding to enable the targeting of investment.</p> | <p>The SEA should avoid increasing any potential flood threats or effects.</p> |
| Environment Agency and Defra (2016), Thames River Basin District River Basin Management Plan | |
| <p>Reference is made to the environmental objectives of the WFD are:</p> <ul style="list-style-type: none"> • To prevent deterioration of the status of surface waters and groundwater; • To achieve objectives and standards for protected areas; • To aim to achieve good status for all water bodies or, for heavily modified water bodies and artificial water bodies, good ecological potential and good surface water chemical status; • To reverse any significant and sustained upward trends in pollutant concentrations in groundwater; • The cessation of discharges, emissions and losses of priority hazardous substances into surface waters; • Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants. Environmental objectives are set for each of the protected areas and water bodies in the river basin district. | <p>The WRMP24 may have an effect on some of the Thames RBMP objectives. The SEA should include objectives that take into account the objectives of the Thames RBMP where relevant (e.g. abstraction and WFD status).</p> |
| Port of London Authority (2016) The Vision for the Tidal Thames | |
| <p>The Thames Vision is a 20 year view of the river's future, developed with stakeholders with the goal of making the most of its potential, for the benefit of all. The Vision sees the value of the Thames better</p> | <p>The WRMP24 may have the potential to affect the water environment and river levels and therefore access to the River Thames. The SEA should include objectives that take into account navigation, recreation and tourism.</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|--|---|
| <p>understood and its potential realised. The goals and priority actions are as follows:</p> <ul style="list-style-type: none"> • Port of London: More trade, more jobs • Inland Freight: More goods off roads onto the river • Passenger Transport: More journeys • Sport and Recreation: More participants • Environment and Heritage: Improved tidal Thames environment • Community and Culture: More people enjoying the Thames and its banks | |
| <p>Southern Water Business Plan 2020-25 (2019) Southern Water Environment Policy (2019)</p> | |
| <p>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.</p> | <p>The SEA Objectives will need to take account of the strategic programmes for achieving “a resilient water future.”</p> |
| <p>Southern Water WRMP (2019)</p> | |
| <p>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.</p> | <p>The SEA Objectives will need to take account of the approaches to drought-planning.</p> |
| <p>Southern Water WRMP19 2020-2070 (2019)</p> | |
| <p>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</p> | <p>The SEA Objectives will need to take account of the investment commitments and strategies set out in the WRMP19 .</p> |

| Objectives identified in the Policy, Plan or Programme | Influences on the WRMP24 and the SEA objectives |
|---|--|
| 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. | |
| Water Resources Management Plans from adjacent water companies (2019) | |
| <p>These set out the plans to manage water resources by companies in adjacent areas. These include:</p> <ul style="list-style-type: none"> • Affinity Water • Portsmouth Water • South East Water • Sutton East Surrey Water • Bournemouth Water • Wessex Water • Thames Water | <p>The WRMP24 should not conflict with the other water company operations and the SEA to take these into account in the cumulative effects assessment.</p> |

Appendix E Environmental Baseline

Introduction

Baseline data given below have been drawn from a variety of sources, including a number of the plans, policies and programmes reviewed as part of the SEA process. These sections also summarise the likely future trends for the environmental issues being considered (where information is available). The key issues arising from the review of baseline conditions are summarised in Section 3 of the main report.

Biodiversity, Fauna and Flora

Baseline

Biodiversity comprises the variety of plants (flora) and animals (fauna) in an area, and their associated habitats. The importance of preserving biodiversity is recognised from an international to a local level. Biodiversity has importance in its own right, and has value in terms of quality of life and amenity.

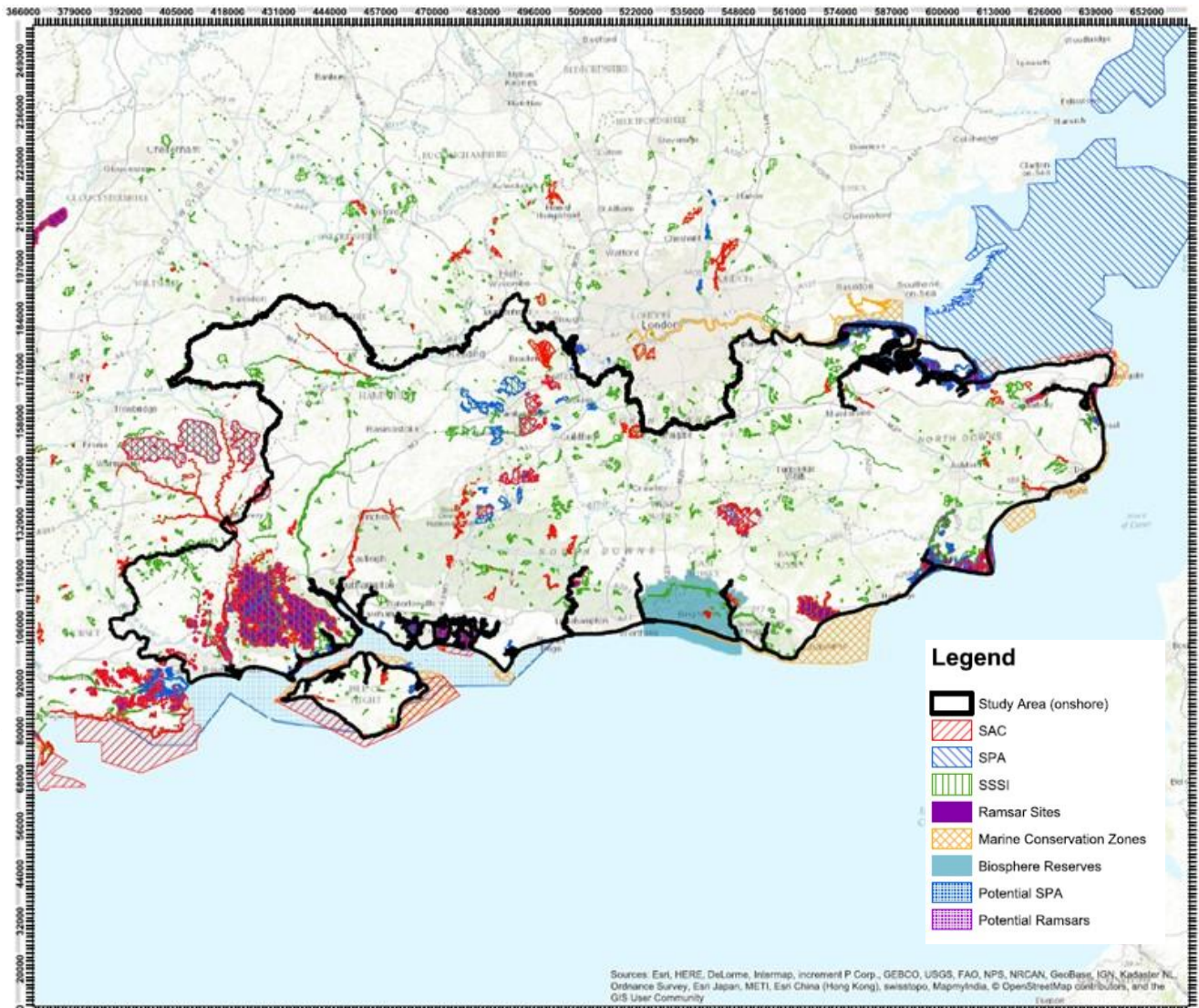
Designated Sites

There are a variety of sites that are designated at a European, national or local level as important for biodiversity, flora and fauna, falling within, or intersecting with, the study area. These include:

- 23 Special Protection Areas (SPA)⁵¹ and 1 proposed SPA (Table D1)
- 51 Special Areas of Conservation (SAC)⁵² and 0 proposed SACs (see Table D2)
- 18 Ramsar Sites and 1 proposed Ramsar site (Table D3)
- 564 Sites of Special Scientific Interest (SSSI)⁵³
- 35 National Nature Reserves (NNR)⁵⁴
- 281 Local Nature Reserves (LNR)⁵⁵
- 14 coastline-related Marine Conservation Zones (MCZ)⁵⁶
- 1 Biosphere Reserve (Brighton and Lewes Downs)⁵⁷
- 24 National Character Areas (NCA)⁵⁸

Figure D1 shows the location of the European designated sites and Figure D2 shows the National designated sites.

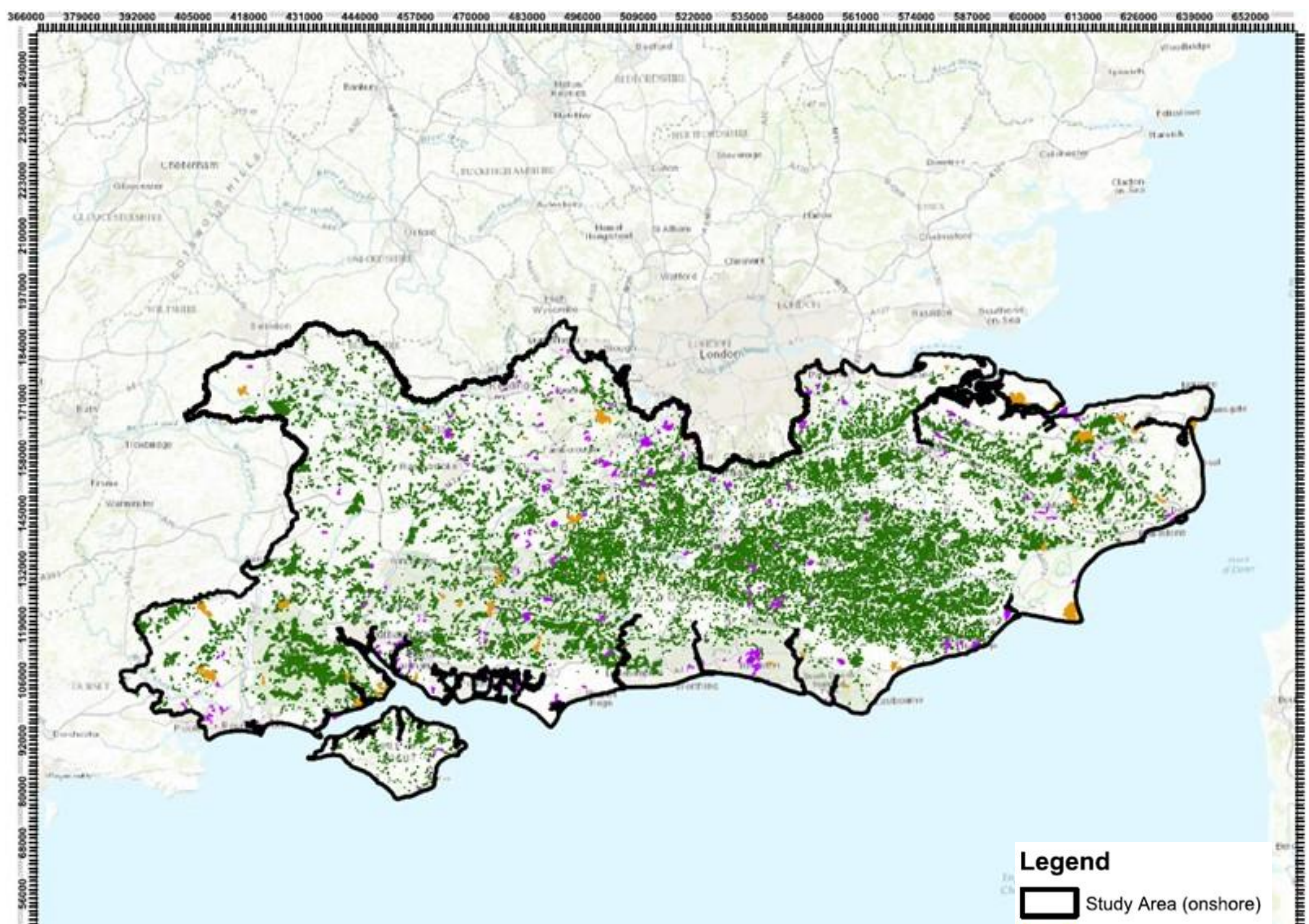
Figure D1 European Designated Biodiversity Sites



⁵⁷ Biosphere Reserves are areas of terrestrial and coastal ecosystems promoting the conservation of biodiversity with sustainable use and serve to demonstrate integrated management of land, water and biodiversity.

⁵⁸ NCAs divide England into 159 distinct natural areas. Each is defined by a unique combination of landscape, biodiversity, geodiversity, history, and cultural and economic activity.

Figure D1 National Designated Biodiversity Sites



Achieving nutrient neutrality for new development in the Solent Region

Of specific relevance in relation to the WRMP24 is the potential for new developments coming forward to have a significant effect on internationally designated sites (Special Protection Areas, Special Areas of Conservation and Ramsar sites) due to the increase in wastewater.⁵⁹

In 2018 and 2019 Natural England undertook a number of condition assessments of the features of the designated international sites around the Solent (the Solent Maritime SAC, Chichester and Langstone Harbours SPA, Portsmouth Harbour SPA, Solent and Southampton Water SPA) as well as the nationally designated SSSIs that underpin these international designations.

The condition of Chichester Harbour and associated Solent Maritime SAC, Chichester and Langstone Harbour SPAs have been condition assessed, with results summarised in the Chi Review NERR090.⁶⁰ Overall, the main intertidal habitats and bird features are assessed as unfavourable declining condition largely due to the continued loss of saltmarsh, the poor quality of saltmarsh and mudflat habitat, and the continued decline of several bird species (wintering and nesting). While the cause of these site specific declines in the Solent area are largely unknown there are possible links to the elevated nutrient loading.⁶¹

The uncertainty about the impact of excessive nutrients on designated sites needs to be recognised for all development proposals that are subject to new planning permissions and have inevitable wastewater implications. These implications, and all other matters capable of having a significant effect on designated sites in the Solent, must be addressed in line with Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

In addition to the Solent, nutrient neutrality advice has been published and applies to wastewater within the Stour Catchment that effect Stodmarsh designated sites. In addition, Natural England is working with Southern Water via their Drainage and Wastewater Management Plan (DWMP) to assess the likelihood of sites failing their conservation objectives on water quality, have a hydrological link to wastewater discharges and where there is significant growth. These are areas where the need for a nutrient neutral methodology cannot be ruled out.

⁵⁹ Natural England (2020) Advice on achieving nutrient neutrality for new development in the solent region

⁶⁰ Natural England (2021) Condition review of Chichester Harbour sites: intertidal, subtidal and bird features (NERR090) [online] available at: <http://publications.naturalengland.org.uk/publication/5535304204419072>

⁶¹ Ibid.

Achieving nutrient neutrality is one way to address the existing uncertainty surrounding the impact of new development on designated sites. Natural England (2020) have released advice on how to calculate nutrient budgets and options for mitigation.⁶²

Priority Habitats and Species

Habitats designated under the Natural Environmental and Rural Communities (NERC) Act⁶³ within the area include rivers and streams (e.g. sensitive chalk rivers), reedbeds, fens, lowland raised bog, coastal and floodplain grazing marsh, saltmarsh, mudflats, coastal lagoons, water meadows, and estuary features. Important water-related NERC species that have been identified from baseline data in the area are listed below (this list is not exhaustive).

- Otter
- Water vole
- Atlantic salmon
- European eel
- Sea/Brown trout
- River lamprey
- White clawed crayfish
- Depressed River Mussel
- Desmoulins Whorl Snail
- Snipe
- Lapwing
- Daubenton's Bat
- Pipistrelle Bat
- Blunt-leaved Pondweed
- Rice Cut-grass

Ancient Woodlands

Ancient woodlands in England are important habitats that should be protected. An ancient woodland is any wooded area that has contained woodland continuously since at least 1600AD. They tend to be more ecologically diverse and of a higher nature conservation value than those developed recently, or where cover on the site has been intermittent. They often also have cultural importance. Areas of ancient woodland are shown on Figure D2 and there is approximately 1,200 km² within the study area, which makes up about 8% of the total area.

Water Framework Directive - ecological status

The WFD ecological status classification considers the condition of biological quality elements (e.g. aquatic invertebrates, plants and fish), the morphology of the habitat available in each water body (e.g. a defined stretch of river), and concentrations of supporting physico-chemical elements (e.g. oxygen or ammonia and concentrations of specific pollutants). See the 'Water' topic for details on water quality and ecological condition of water bodies.

Water abstraction and associated infrastructure can sometimes result in adverse effects on water-related sites. Impacts on biodiversity may be caused by the drying out of wetland habitats, lower water levels and slower flows in watercourse, deterioration in water quality, change in water temperature, or the transfer or proliferation

⁶² Ibid.

⁶³ Species or habitats of principal importance for the conservation of biodiversity in England, identified in the Natural Environmental and Rural Communities (NERC) Act 2006 Section 41. Species can be protected without being included on the S41 species list; all bats in Britain are protected under Schedule 5 of the Wildlife and Countryside Act of 1981.

of invasive species. The WFD South Eastern River Basin District Management Plan (RBMP) identifies barriers to fish passage as one of the major issues affecting the ecology of rivers in the South East River Basin District, some of which are related to abstraction impacts on migratory flow conditions and/or abstraction infrastructure (e.g. intakes or weirs).

Future Baseline

It is not expected that many additional sites will be designated under international or national legislation over the life of the WRMP24, with the focus therefore on achieving the conservation objectives set for each of these sites, and in a small number of cases in the area, the provision of compensatory habitat where development activities have led to an adverse effect on a European Site. Consideration should also be given to the uncertainty about the impact of excessive nutrients on the Solent. Where the WRMP24 has the potential to impact upon European sites in this respect, Natural England's advice on achieving nutrient neutrality should be utilised.

A range of measures are included in the management plans for each site to contribute to these objectives and, assuming sufficient resources are in place, it is likely that the condition of these sites will improve over the next two or three decades to reach the objectives. These timescales recognise the time required for environmental changes to arise following positive interventions. A similar trend is likely for achievement of objectives associated with the NERC priority habitats.

The uncertainty about the impact of excessive nutrients on designated sites needs to be recognised for all development proposals that are subject to new planning permissions and have inevitable wastewater implications. These implications, and all other matters capable of having a significant effect on designated sites in the Solent and Stour Catchment, must be addressed in line with Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

The number of locally designated sites may increase slightly in response to growing community activities and the development of local environmental initiatives. An improving trend in condition of these sites is also anticipated with greater resources (particularly voluntary resources) devoted to their protection and enhancement. It is acknowledged that there is a need to allow wildlife to adapt to the impacts of climate change.

The Natural Environment White Paper⁶⁴ identified the Government's aims to work to achieve more, bigger, better and less-fragmented areas for wildlife, including no net loss of priority habitat and an increase of at least 200,000 hectares in the overall extent of priority habitats and at least 50% of SSSI to be in favourable condition, while maintaining at least 95% in favourable or recovering condition.

More broadly, the White Paper and subsequent Government policy encourages partnership working by a wide range of organisations (including water companies where applicable) to take a catchment and/or landscape-scale perspective to the management of biodiversity, flora and fauna. Catchment-based approaches are likely to be increasingly taken with respect to the delivery of biodiversity and ecological objectives for water-dependent sites and species, with partnership working a key component of the delivery of improvement activities.

Climate change is likely to have an impact on wildlife in the future by exacerbating existing pressures such as changes to the timing of seasonal activity, and water scarcity. There is therefore a need to allow wildlife to adapt to climate change.

⁶⁴ Defra (2011) The Natural Choice: securing the value of nature. Natural Environment White Paper.

Table D1 Special Protection Areas (SPA) within the Study Area and intersecting with the Study Area boundary

| Special Protected Area |
|---|
| Arun Valley |
| Ashdown Forest |
| Avon Valley |
| Chichester & Langstone Harbours |
| Dorset Heathlands |
| Dungeness, Romney Marsh & Rye Bay |
| Medway Estuary & Marshes |
| New Forest |
| Outer Thames Estuary |
| Pagham Harbour |
| Poole Harbour |
| Porton Down |
| Portsmouth Harbour |
| Salisbury Plain |
| Solent and Dorset Coast |
| Solent & Southampton Water |
| South West London Waterbodies |
| Stodmarsh |
| Thames Basin Heaths |
| Thames Estuary & Marshes |
| Thanet Coast & Sandwich Bay |
| The Swale |
| Thursley, Hankley & Frensham Commons (Wealden Heaths Phase I) |
| Wealden Heaths Phase II |

Table D2 Special Area of Conservation (SAC) within the Study Area and intersecting with the Study Area boundary

| |
|--------------------|
| Arun Valley |
| Ashdown Forest |
| Blean Complex |
| Bridlesford Copses |
| Buster Hill |
| Castle Hill |

Chilterns Beechwoods
Dorset Heaths
Dungeness
East Hampshire Hangers
Ebernoe Common
Emer Bog
Folkestone to Etchinghill Escarpment
Great Yews
Hastings Cliffs
Isle of Wight Downs
Kennet & Lambourn Floodplain
Kennet Valley Alderwoods
Kingley Vale
Lewes Downs
Lydden & Temple Ewell Downs
Mole Gap to Reigate Escarpment
Mottisfont Bats
North Downs Woodlands
Parkgate Down
Peters Pit
Pevensey Levels
Pewsey Downs
Queendown Warren
River Avon
Richer Itchen
River Lambourn
Rook Clift
Salisbury Plain
Sandwich Bay
Shortheath Common
Singleton & Cocking Tunnels
Solent & Isle Of Wight Lagoons
Solent Maritime
South Wight Maritime
Stodmarsh
Tankerton Slopes & Swalecliffe
Thanet Coast
The Mens
The New Forest
Thursley, Ash, Pirbright & Chobham

Windsor Forest & Great Park
Woolmer Forest
Wye & Crundale Downs

Table D3 Ramsar Sites within the Study Area and intersecting with the Study Area boundary

| Ramsar |
|-------------------------------------|
| Poole Harbour |
| Portsmouth Harbour |
| Pevensy Levels |
| Arun Valley |
| Avon Valley |
| Medway Estuary & Marshes |
| The Swale |
| New Forest |
| Pagham Harbour |
| Thames Estuary & Marshes |
| Chichester and Langstone Harbours |
| Stodmarsh |
| Thanet Coast & Sandwich Bay |
| South West London Waterbodies |
| Thursley & Ockley Bogs |
| Dungeness, Romney Marsh and Rye Bay |
| Dorset Heathlands |
| Solent & Southampton Water |

Population and Human Health

Baseline

Population

The greater South East region is a densely populated part of the UK, with an estimated population of 9,180,135 in mid-2019.⁶⁵ Over the ten year period 2009 – 2019 the South East population increased by 8.1%.⁶⁶ The

⁶⁵ Office for National Statistics (2020) Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland [online] available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

⁶⁶ Ibid.

population is projected to increase to 9.5 million by 2028 (3.9% increase from the mid-2019 estimates).⁶⁷ Natural change (difference between births and deaths), net within-UK migration and net international migration are all positive for the South East. This is compared with other regions such as the North East and the South West where the growth rate is slowed down by negative natural change (more deaths than births).⁶⁸

Water is supplied by Southern Water to around 2.6 million people, within 1.1 million properties.⁶⁹ In addition, the companies average daily water supply is 542 million litres. Waste water is supplied by Southern Water to around 4.7 million people, within 2 million properties.⁷⁰ The average daily wastewater recycled is 745 million litres.

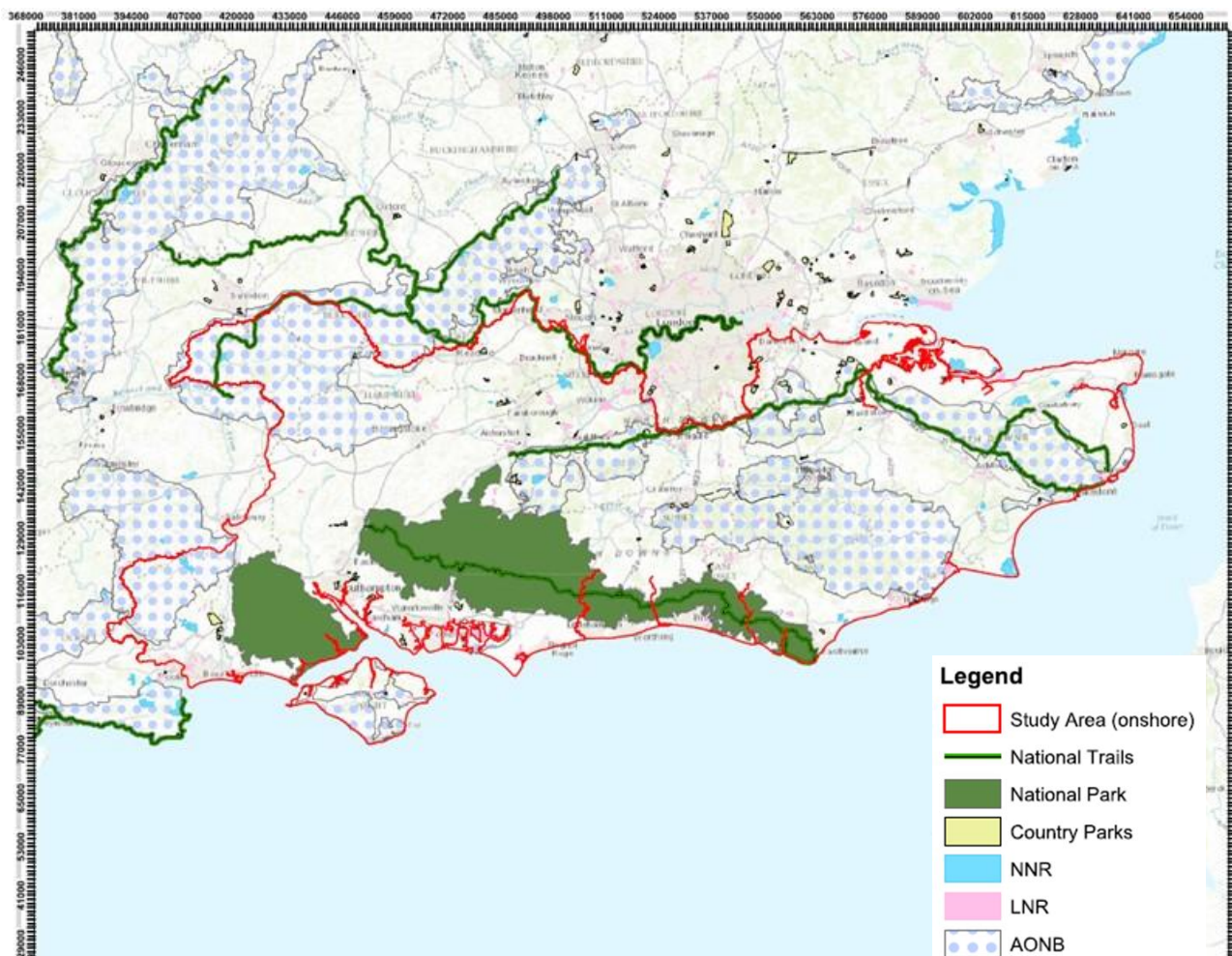
Human Health

Health-related sustainability indicators are reported in the annual Public Health England Health Profiles.⁷¹ In general, the health of the population is good for the South East with the healthy life expectancy for both men and women increasing during the period of 2017 to 2019, reaching 80.8 years for men and 84.3 year for women. Water is considered a vital resource that is managed carefully to ensure both that people have access to affordable and safe drinking water and sanitation. Data relating to air quality, which could also be affected by the WRMP24, and as a result affect health, are covered in the air quality section of this SEA Scoping Report.

Recreation and Tourism

There were over 218 million domestic day visitors a day to the South East within 2019.⁷² This led to expenditure of almost £8 million, making up 12% of total expenditure within the study area in 2019. Figure D3 shows some of the areas that may be used for recreation within, and intersecting with the study area. This includes National Trails, Areas of Outstanding Natural Beauty (AONB) (see Landscape and Visual Amenity topic), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) (see Biodiversity, Flora and Fauna topic). Southern Water's surface water reservoirs are accessible to the public and provide a range of recreation facilities, including bird-watching, walking, sailing or fishing. Some sections of rivers in the area are of particular importance with respect to navigation (e.g. the River Arun and Wey) and angling (e.g. River Test).

Figure D3 Recreation Resources



Public areas of open space, National Parks (see Landscape and Visual Amenity topic), country parks⁷³, Rights of Way, walking routes and cycle routes are also important with respect to recreation and tourism (e.g. South Downs Way national trail). The National Planning Policy Framework (NPPF) states planning policies should protect and enhance public rights of way and access. All Local Authorities are required to prepare and publish Rights of Way Improvement Plans (ROWIPs). These plans explain how improvements made by local authorities to the public rights of way network will provide a better experience for a range of users, including pedestrians, cyclists, horse riders, horse and carriage drivers, people with mobility problems, and people using motorised vehicles (e.g. motorbikes).

The NPPF defines green infrastructure as ‘a network of multi-functional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities’ (including rivers and ponds). Local planning authorities are required to plan positively for strategic networks of green infrastructure, and take account of the benefits of green infrastructure in reducing the risks posed by climate change. The majority of LAs have therefore developed Green Infrastructure Strategies or Studies addressing these issues. Green infrastructure will often play a large part in local recreational resources.

Economy and Employment

The Greater South East region is a prosperous region of the UK and has relatively low rates of unemployment. The Greater South East region contributes around 14.5% of the total UK economy, and Gross Domestic Product (GDP) per head in the South East is £34,083, which is higher than the national UK average of £31,976.⁷⁴

⁷³ Area designated for people to visit and enjoy recreation in a countryside environment

⁷⁴ ONS (2020) Regional economic activity by gross domestic product, UK: 1998 to 2018

<https://www.ons.gov.uk/economy/grossdomesticproductgdp/bulletins/regionaleconomicactivitybygrossdomesticproductuk/1998to2018>

The South East region is one of the most densely populated and urbanised parts of the UK, where business services make up a significant proportion of the economy; however, agriculture is also one of the more important industries outside of Greater London.

Future Baseline

Population is projected to grow at a rate by 3.9% across the South East (9 years from 2019 to 2028)⁷⁵. In response to recent studies access to the recreational resources, green spaces and the historic environment will have greater importance in future planning⁷⁶. For example, the National Ecosystem Assessment and the Marmot Review, Fair Society, Healthy Lives, demonstrate the positive impact that nature has on mental and physical health and as a result the Government intends to establish a Green Infrastructure⁷⁷. Partnership with civil society to support the development of green infrastructure in England. Improvements to the quality of the water environment and certain potential climate change impacts will present opportunities for an expanding tourist industry in the region⁷⁸.

Material Assets and Resource Use

Baseline

Water Use

Southern Water supplies approximately 542 million litres of drinking water each day from its 84 water supply works along almost 14,000 kilometres of water mains to customers' taps.⁷⁹ In 2020, Southern Water achieved 99.95% (2019: 99.98%) compliance with the Drinking Water Inspectorate's (DWI's) water quality measures. Also in 2020, Southern Water's leakage was above target at 94 MI/d (2019: 102 MI/d). Although an improvement on 2019, the company's five-year target was missed, incurring a penalty of £2.7 million. This was due to the extreme weather of 2018 and 2019. Since then, a reduction of 15% has been seen, which aligns with outline commitments made for 2020 – 2025. In 2019-2020 Southern Water have also been able to limit the number of customers' properties at risk of experiencing low pressure to 203, which is well below the 257 target.

Moving into the next five year period to 2025, Southern Water will continue running a Catchment First programme, working with farmers and landowners to design and deliver solutions that address water quality at the source, which will deliver benefits to all.⁸⁰ Southern Water is actively pursuing measures to encourage its customers to reduce their water use and use water wisely, particularly in dry conditions, and made a commitment to customers in the business plan 2015–20 to achieve a 10% reduction (15 litres per person, per day) in average water use by 2020.⁸¹ As the five-year period closed, an average water use of 126.5 litres per person was recorded, per day (2019: 129.9 litres). This is an improvement on 2018, when a long, hot summer led to a spike in consumption. It is also well below the target of 133.7 litres, and significantly lower than the UK average, which is still around 144 litres. Southern Water has invested significantly in installing water meters for a high proportion of its customers to encourage efficient use of water and it has an active programme to

⁷⁵ Office for National Statistics (2020) Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland [online] available at:

<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland>

⁷⁶ Defra (2011) The Natural Choice: securing the value of nature, The Natural Environment White Paper

⁷⁷ Green infrastructure is a term used to refer to the living network of green spaces, water and other environmental features in both urban and rural areas.

⁷⁸ Defra (2012) The UK Climate Change Risk Assessment 2012 Evidence Report.

⁷⁹ Southern Water (2020) Southern Water Annual Report 2019 – 2020 <https://www.southernwater.co.uk/the-news-room/the-media-centre/2020/july/southern-water-annual-report-2019-20>

⁸⁰ Ibid.

⁸¹ Ibid.

promote water conservation to both household and commercial properties. Water efficiency activity provides the greatest benefit to safeguarding water supplies: in 2020, 985,774 properties served by Southern Water were metered (approximately 90%).

Resource use and waste

There is an ongoing need for society to reduce the amount of waste it generates, by using materials more efficiently, and improving the management of waste that is produced. Waste in the South East region going to landfill has decreased by approximately 82% over the period 2008/9 to 2018/19 (1,975 thousand tonnes to 357 thousand tonnes).⁸² Additionally, the waste sent to landfill was just 8.6% of total waste in 2018/19, compared to 45.6% in 2008/09. Household recycling rates in the South East have climbed to nearly 47% of waste generated (2018/19)⁸³, compared to 39.1% in 2008/09.

In line with the widely adopted 'waste hierarchy'⁸⁴, best practice for waste management is to reduce, re-use, recycle and recover, and only then should disposal (or storage) in landfill be considered. Data on waste arisings is collected in a range of categories. The activities of the water industry contribute to construction, demolition and excavation waste (CDEW), through construction of new infrastructure. The water industry also contributes to several waste streams through the operation of facilities. Waste streams include commercial and industrial waste (C&I) (statistics include waste arisings from the power and utilities sector, which includes water supply and sewage removal), and also hazardous wastes. Table D4 below shows waste according to waste type in England 2014 – 16, and percentage change by type. Table D4 shows that waste from CDEW has seen the greatest increase between the two years. Tables D5 and D6 provide further baseline information regarding waste.

Table D4 Waste generation split by responsible economic activity in England, 2014-16 (million tonnes)⁸⁵

| | Commercial and Industrial (C&I) | Construction, demolition & excavation (CDEW) | Households | Other | Total |
|--------------------------|---------------------------------|--|------------|-------|--------------|
| 2014 | 38.7 | 130.3 | 26.8 | 18.2 | 214.0 |
| 2016 | 39.8 | 136.2 | 27.3 | 17.7 | 221.0 |
| Percentage change | 3.0% | 4.5% | 1.9% | -2.8% | 3.3% |

⁸² Gov.uk (2020) Local authority collected waste generation from April 2000 to March 2019 (England and regions) and local authority data April 2018 to March 2019 <https://www.gov.uk/government/statistical-data-sets/env18-local-authority-collected-waste-annual-results-tables>

⁸³ Ibid.

[www.gov.uk/government/uploads/system/uploads/attachment_data/file/481060/LA and Regional spreadsheet 2014-15_publication.ods](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/481060/LA_and_Regional_spreadsheet_2014-15_publication.ods)

⁸⁴ Defra (2011) Waste Hierarchy Guidance

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69403/pb13530-waste-hierarchy-guidance.pdf

⁸⁵ UK Statistics on Waste

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918270/UK_Statistics_on_Waste_statistical_notice_March_2020_accessible_FINAL_updated_size_12.pdf

Table D5 Waste from households in England – 2015 - 2018⁸⁶

| England | Waste arisings ('000 tonnes) | Recycled ('000 tonnes) | Recycling rate (%) |
|---------|------------------------------|------------------------|--------------------|
| 2015 | 22,225 | 9,849 | 44.3% |
| 2016 | 22,770 | 10,217 | 44.9% |
| 2017 | 22,437 | 10,139 | 45.2% |
| 2018 | 22,033 | 9,840 | 44.7% |

Table D6 Municipal waste and Biodegradable Municipal Waste (BMW) to landfill in England 2015-2018⁸⁷

| England | Municipal waste to Landfill ('000 tonnes) | Of which BMW to Landfill ('000 tonnes) | BMW to Landfill as % of 1995 target baseline |
|---------|---|--|--|
| 2015 | 12,215 | 5,980 | 21% |
| 2016 | 12,381 | 6,049 | 21% |
| 2017 | 11,784 | 5,684 | 20% |
| 2018 | 11,688 | 5,598 | 19% |

Note: 1995 baseline for England 29,030,000 – no greater than 50% baseline by 2013 and 35% baseline by 2020.

Future Baseline

Southern Water aims to reduce leakage from its network over the next 25 years with several schemes planned to further reduce the amount of water lost through leaks. Southern Water has improved overall water resilience by reducing the volume of asset outage. However, it did not achieve the 2015- 20 five-year leakage target despite additional investment due to the unprecedented 2018 winter and droughts of 2018 and 2019. Nevertheless, since 2018 a reduction of close to 15% in the most stressed part of the region has been recorded, which is the committed reduction percentage for the next five-year period. Southern Water's aim is to place no restrictions on customer's water use, such as Temporary Use Bans, unless there are at least two dry winters in a row.

The Government's national aspiration is to reduce water usage to an average of 130 l/h/day by 2030. Southern Water is already meeting this aspiration with an average of 126.5 litres per person was recorded, per day for the year 2020. Furthermore, the number of metered households served by Southern Water is now up to 985,774 properties (approximately 90%).

There is the potential for increase in operational waste from the water sector as regional population increases and standards of treatment are increased through regulatory requirements. With the Waste Strategy for England, diminishing landfill capacity and a fast-growing waste recycling and recovery industry, the proportion of waste sent to recovery rather than landfill is set to continue to increase in the future. One of the Waste Framework Directive targets is for a binding landfill target to reduce landfill to maximum of 10% of municipal waste by 2030.

⁸⁶ Ibid.

⁸⁷ UK Statistics on Waste

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/918270/UK_Statistics_on_Waste_statistical_notice_March_2020_accessible_FINAL_updated_size_12.pdf

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/487916/UK_Statistics_on_Waste_statistical_notice_15_12_2015_update_f2.pdf

The Government's first National Infrastructure Plan⁸⁸ (NIP) (2010) included visions to manage natural capital sustainably; treat water and waste in ways that sustain the environment and enable the economy to prosper; ensure a supply of water that meets the needs of households, businesses and the environment now and in the future and deals with waste in accordance with the waste hierarchy. The plan was updated in 2016, setting out progress to date whilst including detailed delivery plans to 2021 in key economic sectors⁸⁹.

Water

Baseline

In the context of the WFD, the water environment includes rivers, lakes, estuaries, groundwater and coastal waters out to one nautical mile. The aquatic environment of the South East and Thames River Basin has been characterised as part of the UK Government's reporting obligations to the EU under the WFD and this provides the most appropriate baseline reference⁹⁰. The WFD brings together the planning processes of a range of other European Directives. These Directives establish protected areas to manage water, nutrients, chemicals, economically significant species, and wildlife, and have been brought in line with the planning timescales of the WFD.

The area is classified as water-stressed. All of the water that Southern Water supplies relies on rainfall, yet the South East is one of the driest regions in the country, with an average of 730 mm a year. The amount of rain in a year can vary widely from a maximum of 1,070 mm to a minimum of 340 mm.

Most of this rain falls between October and March and is critical to recharge groundwater each year. Rainfall during the rest of the year is usually taken up by plants, lost through evaporation or runs off the land. Southern Water has a variety of different water sources which react very differently to weather patterns.

Surface Waters: Rivers and Canals

The area under consideration lies within the South East River Basin District and partially within the Thames. The main rivers include the Test and Itchen in Hampshire, the Arun and the Western Rother in Sussex and the Medway and the Stour in Kent. River abstractions account for 23% of the Southern Water supply, most notably: the Medina and Eastern Yar on the Isle of Wight; the Test and Itchen in Hampshire; the Western Rother and Arun in West Sussex; the Eastern Rother and Brede in East Sussex; and the Teise, Medway and Great Stour in Kent.⁹¹

Surface water features within and intersecting the study area are shown in Figure D4.

Figure D4 Surface Water Features



Surface Waters: Lakes and Reservoirs

There are 28 lakes within the South East River Basin District, along with a small number of man-made reservoirs owned by various water companies. The four Southern Water surface water impounding reservoirs are responsible for 7% of Southern Water's supply: the largest is Bewl Water on the Kent/Sussex boundary, followed by Weir Wood, Darwell and Powdermill situated in Sussex. The total storage capacity of all the supply reservoirs amounts to 42,390 million litres (although South East Water are entitled to 25% of supplies from the River Medway Scheme which incorporates Bewl Water reservoir).⁹² Ardingly, Arlington and Bough Beech reservoirs are also located in the area, but are owned and operated by other water companies.

Transitional and Coastal (TraC)

The South East River Basin District includes 23 estuarine ('transitional waters') and eleven coastal water bodies as shown in Figure D5.

Groundwater

The water supply in the area predominantly comes from the transmission and storage of groundwater, from the widespread chalk aquifer across the region. This extends throughout parts of Kent, Sussex and the Isle of Wight and makes up 70% of the total supply for Southern Water. The majority of supply comes from chalk aquifers but a small proportion comes from the Lower Greensand which are mainly sands and sandstones.

The Environment Agency considers that licensed groundwater abstraction is fully utilised over much of the South East river basin. Both the quantity and quality of groundwater is extremely important in maintaining

⁹² Ibid.

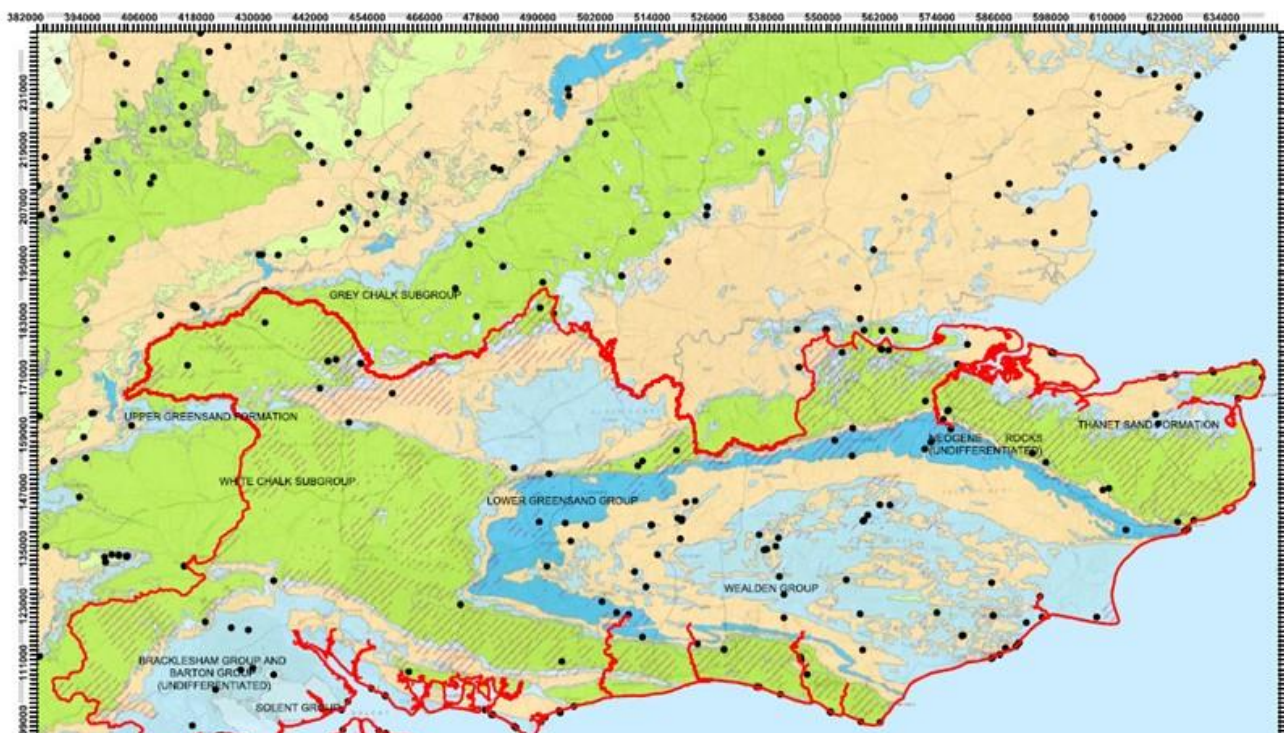
these resources. Groundwater is vulnerable to pollution from surface activities, since aquifers underlie up to two-thirds of the land surface in this densely populated area.

Under the WFD there are two separate classifications for groundwater bodies: chemical status and quantitative status. A groundwater body will be classified as having poor quantitative status in the following circumstances: where low groundwater levels are responsible for an adverse impact on rivers and wetlands normally reliant on groundwater; where abstraction of groundwater has led to saline intrusion; where it is possible that the amount of groundwater abstracted will not be replaced each year by rainfall. For a groundwater body to be at good status overall, both chemical status and quantitative status must be good. In addition to assessing status, there is also a requirement to identify and report where the quality of groundwater is deteriorating as a result of pollution and which may lead to a future deterioration in status.

Source Protection Zones (SPZ) provide additional protection to safeguard drinking water quality. This is achieved through constraining the proximity of an activity that may impact upon drinking water abstraction. They are defined around large and public potable groundwater abstraction sites, and the groundwater travel time to an abstraction.

SPZs and WFD groundwater bodies within and intersecting with the study area are shown in Figure D5.

Figure D5 SPZs & WFD Groundwater Bodies



Catchment Abstraction Management Strategies

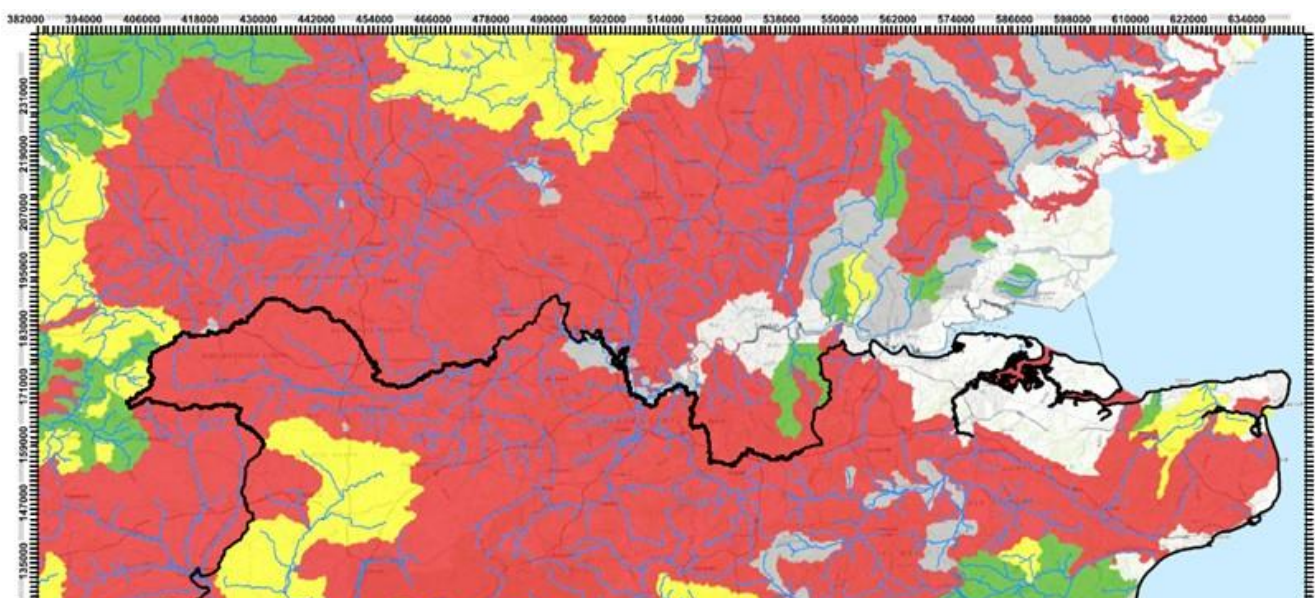
A national review of abstraction licences was undertaken by the Environment Agency through the CAMS (Catchment Abstraction Management Strategies) process in 2004. This has been updated in subsequent years where applicable and to align the assessment process with the WFD. The latest review was undertaken in 2013, and the outputs for each CAMS area are reported in a set of Abstraction Licensing Strategies.

The Environment Agency use the CAMS work to assess and understand water resource availability. A classification system has been developed to indicate the following:

- the relative balance between the environmental requirements for water and how much is licensed for abstraction;
- whether water is available for further abstraction; and
- areas where abstraction may need to be reduced.

The results have been mapped onto WFD Cycle 2 boundaries and are represented by different water resource availability colours showing the availability of water resource for further abstraction. Figure D6 shows the Environment Agency representation of resource availability based on the worst downstream water body at low flows (the flow percentile called Q95). It is apparent from Figure D6 that little surface water is actually available and the status of most rivers is identified as 'water not available for licensing' or 'restricted water available for licensing'.

Figure D6 Water Resource Availability



Legend



Water Framework Directive Classification

Since 2007, the health of water bodies has been classified according to several quality elements in line with the requirements of the WFD.

For surface waters, there are two separate status classifications for water bodies: ecological and chemical. For a water body to be in overall 'good' status both ecological and chemical status must be at least 'good'. Biological status classification considers the condition of biological quality elements, e.g. aquatic invertebrates, plants and fish, the morphology of the habitat available, concentrations of supporting physico-chemical elements (e.g. oxygen or ammonia and concentrations of specific pollutants).

The latest South East River Basin Management Plan (2015) shows that of 408 river water bodies within the area, with regard to their ecological status or potential, 5% were classified as 'bad', 24% as 'poor', 61% as 'moderate', 10% as 'good' and 0% as 'high'. 99% were classified 'good' for their chemical status (Table D7). In terms of the percentage of water bodies with 'good' or better ecological status in the study area, lakes were 29% (Table D8) and transitional water were 28% (Table D9).

Table D7 Ecological and chemical classification for Rivers 2015 – Southern Water Study Area

| RBD | No. of water bodies | Ecological status or potential | | | | | Chemical Status | |
|-----------------------------|---------------------|--------------------------------|-----------|------------|-----------|----------|-----------------|------------|
| | | Bad | Poor | Mod | Good | High | Fail | Good |
| Thames | 163 | 9 | 40 | 106 | 8 | 0 | 3 | 160 |
| South East | 214 | 10 | 55 | 127 | 22 | 0 | 2 | 212 |
| South West | 31 | 3 | 4 | 15 | 9 | 0 | 0 | 31 |
| Total for Study Area | 408 | 22 | 99 | 247 | 39 | 0 | 5 | 403 |

Table D8 Ecological and chemical classification for Lakes and Reservoirs 2015 – Southern Water Study Area

| RBD | No. of water bodies | Ecological status or potential | | | | | Chemical Status | |
|-----------------------------|---------------------|--------------------------------|----------|-----------|-----------|----------|-----------------|-----------|
| | | Bad | Poor | Mod | Good | High | Fail | Good |
| Thames | 37 | 0 | 5 | 25 | 7 | 0 | 0 | 38 |
| South East | 29 | 1 | 3 | 15 | 10 | 0 | 0 | 28 |
| South West | 11 | 0 | 0 | 6 | 5 | 0 | 0 | 11 |
| Total for Study Area | 77 | 1 | 8 | 46 | 22 | 0 | 0 | 77 |

Table D9 Ecological and chemical classification for Transitional water bodies 2015 – Southern Water Study Area

| RBD | No. of water bodies | Ecological status or potential | | | | | Chemical Status | |
|-----------------------------|---------------------|--------------------------------|----------|-----------|----------|----------|-----------------|-----------|
| | | Bad | Poor | Mod | Good | High | Fail | Good |
| Thames | 8 | 0 | 0 | 4 | 4 | 0 | 0 | 8 |
| South East | 23 | 0 | 2 | 16 | 5 | 0 | 2 | 21 |
| South West | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Total for Study Area | 32 | 0 | 2 | 21 | 9 | 0 | 2 | 30 |

Out of 67 groundwater bodies in the study area, 33 of them are classified as good for quantitative status (49%) and 36 for chemical status (54%) (see Table D10 below). The main reason for poor quantitative status is that abstraction levels, mainly for public water supply, exceed the rate at which aquifers recharge⁹³.

Table D10 Chemical and quantitative classification for Groundwater 2015 – Southern Water Study Area

| No. of water bodies | Quantitative status | | Chemical status | |
|---------------------|---------------------|------|-----------------|------|
| | Poor | Good | Poor | Good |
| 67 | 34 | 33 | 31 | 36 |

Flood Risk

Flooding can result from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers and drainage systems, and from reservoirs, canals and lakes and other artificial sources. The Environment Agency's Flood Risk Maps available on its website show what is at risk of flooding, including people, economic activity and natural and historic environment⁹⁴. There are two defined high flood risk areas – the City of Brighton & Hove and the Medway area. These are areas where there is a significant risk of flooding from local sources, such as surface water, groundwater and ordinary watercourses, combined with a significant population at risk of the effects of flooding.

The extreme floods of 2007 prompted the Pitt Review (2008) and the subsequent Flood and Water Management Act 2010 which in part regulates the implementation of sustainable drainage systems (SuDS) to increase infiltration and reduce flooding from surface water runoff. Since 2008, the Government have further recognised the importance of investing in flood risk and coastal management. Most recently, in 2020 the Government announced its long-term plan to tackle the risks of flooding and coastal erosion.⁹⁵ The measures set out in the plan include an investment of £5.2 billion to create around 2,000 new flood and coastal defences to better protect 336,000 properties in England by 2027. The plan also includes £200 million for innovative projects such as sustainable drainage systems and nature-based solutions like temporary or permanent water storage areas which also boost wildlife. These will support 25 areas at risk of flooding to test and demonstrate innovative actions to adapt to a changing climate and improve their resilience. Of relevance to the study area, in Brighton, Hove, and Shoreham, £2 million will be spent to protect critical infrastructure on the south coast, including a power plant serving 300,000 homes and one of the largest cargo ports in the south of England.⁹⁶

Climate change may have a significant effect upon future flood risk in the region. This is discussed further below and in the Air and Climate Change topic.

Coastal saltmarsh is an important natural resource and ecosystem service. Through reducing wave energy close to tidal defences, it can provide demonstrable flood and coastal risk management benefits, as well as supporting wildlife habitats and species of national and international significance. Saltmarsh habitat extent is

⁹³ Defra and The Environment Agency (2015), South East River Basin District River Basin Management Plan

⁹⁴ Environment Agency (2013) Flood Risk Maps – Risk of Flooding from Surface water – Thames River Basin District: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/456969/LIT8979_FloodRiskMaps_Thames_SurfaceWater_v2.pdf and South East River Basin District https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/456968/LIT8974_FloodRiskMaps_SouthEast_SurfaceWater_v2.pdf

⁹⁵ Defra (2020) Multi-billion pound investment as government unveils new long-term plan to tackle flooding <https://www.gov.uk/government/news/multi-billion-pound-investment-as-government-unveils-new-long-term-plan-to-tackle-flooding>

⁹⁶ Ibid.

conserved and enhanced through management measures driven in particular by the Habitats and Birds Directives and the WFD.

Future Baseline

Originally, the WFD set a target of aiming to achieve at least 'good status' in all water bodies by 2015. However, provided that certain conditions are satisfied, it was acknowledged that in some cases the achievement of good status may be delayed until 2021 or 2027. The primary objective in the short-term is to ensure no deterioration in status between status classes: the 2015 water body classification is the baseline from which deterioration between classes is assessed; no deterioration between status classes is permitted unless certain and specific conditions apply.

Climate change is considered likely to adversely impact on surface and groundwater resources over the longer term, with some modest impacts potentially arising over the medium term to 2040. The Catchment Flood Management Plans (CFMP)⁹⁷ assumes the following key trends:

- Milder wetter winters resulting in increases in peak river flows of 20%, meaning that flooding will happen more often and large scale severe flooding will be more likely to happen.
- More frequent, short duration intense storms in summer causing more widespread and regular flash flooding from overwhelmed drainage systems and some rivers.

The NPPF⁹⁸ states that inappropriate development in areas at risk of flooding (in Flood Zone 1⁹⁹, Flood Zone 2¹⁰⁰, Flood Zone 3a¹⁰¹ or Flood Zone 3b - the functional floodplain); should be avoided by directing development away from areas at highest risk. The NPPF requires that where development is necessary, it should be made safe without increasing flood risk elsewhere, as defined in the Technical Guidance to the NPPF¹⁰².

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. However it is recognised that regulations and legislation will likely continue to promote the reduction in emissions through commitments to net zero. The water industry in the UK is aiming to become net zero by 2030.¹⁰³

⁹⁷ Environment Agency (2009) South East River Basin District Catchment Flood Management Plans.
<https://www.gov.uk/government/collections/catchment-flood-management-plans#south-east-river-basin-district>

⁹⁸ Department for Communities and local Government (2012) National Planning Policy Framework:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

⁹⁹ Low probability of river or sea flooding (<0.1%) which has critical drainage problems

¹⁰⁰ Medium probability of river (1%-0.1%) or sea flooding (0.5%-0.1%)

¹⁰¹ High probability of river (>1%) or sea flooding (>0.5%)

¹⁰² Communities and Local Government (2012) Technical guidance to the National Policy Planning Framework

¹⁰³ Water UK (2020) Water industry plans to reach net zero carbon by 2030 <https://www.water.org.uk/news-item/water-industry-plans-to-reach-net-zero-carbon-by-2030/>

Soil, Geology and Land Use

Baseline

Geology

Geological sites maybe sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices. The study area is geologically diverse and includes a number of major aquifers including major chalk aquifers and interbedded sandstones and siltstones (see Figure D5 above).

Geological Conservation Review (GCR) sites have been highlighted, which relate to geological important sites, related to their scientific elements and understanding of earth sciences, which are important on a national and international level¹⁰⁴. GCRs are also designated as SSSIs. Several geological SSSIs are found within the area, however some are not directly designated because of geology, although the geological variation does impact on the flora present. The main reason for a geological citation for an SSSI is related to disused quarries and geological important sites such as gravels and cliffs. There are 159 GCRs within the study area.

Soils

The majority of rural land in the study area is farmed, and it is noted that agricultural practices have a major influence on soil quality. Good soil structure is beneficial to water retention and crop yield. It can be seen from Figure D7 that the majority of agricultural land is classified as Grade 3 or higher. Soil quality and structure is affected by changes in land use, groundwater levels and farming practices. Soil quality can influence run-off rates and therefore flooding and water quality.

Future Baseline

The vision of Defra's Soils Strategy for England¹⁰⁵ is for all England's soils to be managed sustainably and degradation threats tackled successfully by 2030. This will improve the quality of England's soils and safeguard their ability to provide essential services for future generations.

The Water White Paper described the Government's intentions to take forward a catchment-based approach to water quality and diffuse pollution and work towards Common Agricultural Policy reforms that will promote the farming industry's role as custodian of the natural environment¹⁰⁶. The Water White Paper also identified that the strategic policy statement for Ofwat and revised social and environmental guidance would give a strong steer on Government support for approaches that offer good value for customers and the potential to prevent and manage future risks to drinking water quality. These policy objectives were reflected in development of catchment partnerships across England (including in the study area) to implement the catchment-based approach and in the support for catchment management schemes in the 2014 water company price review process for Southern Water and other water companies in the area.

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

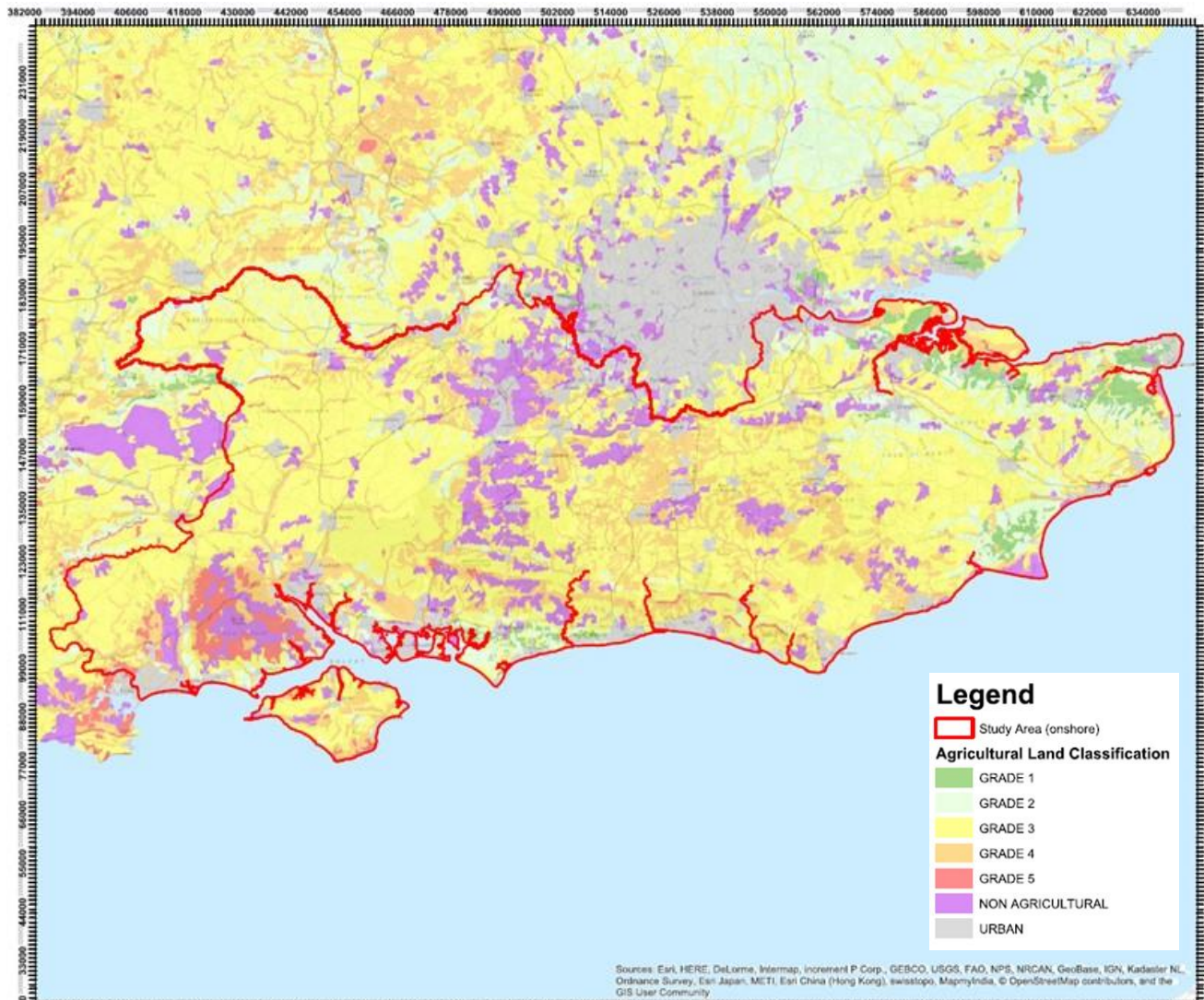
¹⁰⁴ <http://jncc.defra.gov.uk/page-2947>

¹⁰⁵ Defra (2009), Safeguarding our soils – A Strategy for England

¹⁰⁶ Defra (2011) Water for Life - Water White Paper

not apply where proposed developments may affect European or other designated sites covered by specific policies.

Figure D7 Agricultural Land Classification



The baseline situation can be best described through reference to the local authorities that have declared Air Quality Management Areas (AQMA). A local authority declares an AQMA when UK National air quality objectives are unlikely to be met. The local authorities in the study area which have declared an AQMA within their boundaries are illustrated in Figure D8. There are 123 AQMAs in total within, and intersecting with, the study area. The majority of the AQMAs have been declared because of emissions from Nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀).¹⁰⁷

The Air Pollution Information System (www.apis.ac.uk) will be consulted during the assessment process to help understand the baseline risks of air pollution on habitats/sensitive and or designated sites.

Figure D8 Air Quality Management Areas



Greenhouse Gases and Climate Change

The predominant greenhouse gas of interest is carbon dioxide (CO₂). National and regional CO₂ emissions totals are provided in Table D11 and are apportioned to their source categories in Table D12.

Table D11 Carbon dioxide emissions by area (2018)¹⁰⁸

| Area | Annual CO ₂ Emissions / million tonnes | Annual CO ₂ Emissions (% of UK total) |
|-----------------|---|--|
| South East | 12.4 | 12.5% |
| South West | 26.7 | 7.7% |
| East of England | 32.4 | 9.4% |
| London | 28.9 | 8.4% |
| UK | 344.8 | 100% |

¹⁰⁸ Department for Business, Energy & Industrial Strategy (2020) UK local authority carbon dioxide emissions estimates 2018 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/894785/2005-18-local-authority-co2-emissions-statistical-release.pdf

Table D12 End-user carbon dioxide emissions by sector (2018)

| Area | Percentage Contribution by Source Sector | | | | Total | Change from previous year |
|-----------------|---|------------------------------|------------------------------------|-----------------------------|-------|---------------------------|
| | Industry & Commercial % (millions tonnes) | Domestic % (millions tonnes) | Road Transport % (millions tonnes) | LULUCF* % (millions tonnes) | | |
| South East | 27.4% (11.7) | 31.3% (13.3) | 46.1% (19.7) | -4.4% (-1.9) | 42.7 | -2% |
| South West | 30% (8.2) | 28.9% (7.7) | 9.4% (2.5) | -3.0 (-0.8) | 26.7 | -2% |
| East of England | 29.3% (9.5) | 27.5% (8.9) | 44.1% (14.3) | -0.6% (-0.2) | 32.4 | -1% |
| London | 36% (10.4) | 37.3% (10.8) | 26.6% (7.7) | -0.34% (-0.1) | 28.9 | -2% |
| UK | 38.6% (133.3) | 28% (96.4) | 36.8% (126.8) | -3.39% (-11.7) | 344.8 | -2% |

* Land Use, Land Use Change and Forestry

Southern Water is one of the largest users of energy in the South East due to the significant amounts of energy needed to pump water and wastewater and treat it to high quality standards. In 2019–20, carbon emissions produced by Southern Water reduced; recorded at 189 kilotonnes of CO₂e for 2019–20.¹⁰⁹ This is down from 200 kilotonnes in 2018–19. The reduction seen was principally due to the reducing greenhouse gas content in the power bought from the grid. Southern Water’s 2020-2025 Business Plan sets a target level of 24% total renewable energy electricity based on the efficient level.¹¹⁰ The forecast performance for this measure in 2019-20 is 17.5%.

Forecast climate change is likely to influence processes within the hydrological cycle such as runoff and evapotranspiration. The impact of climate change on the water environment and water-related infrastructure is summarised in Table D13.

¹⁰⁹ Southern Water (2020) Annual Report and Financial Statements for the year ended 31 March 2020
https://www.southernwater.co.uk/media/3632/southernwater_ar2020-150720.pdf

¹¹⁰ Southern Water (2020) Our Business Plan 2020 - 2025 <https://www.southernwater.co.uk/our-story/our-plans-2020-25/our-business-plan-2020-25>

Table D13 Potential impact of climate change on the water environment and water-related infrastructure

| Sector | Impact |
|--|---|
| Water Resources (i). water supply (ii). water demand | Reduction in yields, either in total or at certain times of the year. Increased evaporation losses from surface water stores Increased sediment and pollution runoff into watercourses. Increased risk of algal blooms and pollution in reservoirs. Increase in demands in summer months leading to increase in average and peak requirements. Increased pressure on treatment and distribution system. Increased requirements for agriculture. |
| Flood management | Increased riverine storm occurrence and flood risk. Improvements and higher specifications required for flood defences, urban drainage and rainwater disposal. |
| Water quality management | Lowered water quality in lowland rivers, with implications for instream ecosystems and water abstractions. Altered potential for polluting incidents. Increased potential for combined sewer overflows due to an increase in extreme storm occurrences. |
| Navigation | Lower summer flows leading to reduced navigation opportunities in rivers and canals. |
| Aquatic ecosystems | Altered habitat potential, with species at their environmental margins most affected. |
| Water-based recreation | Impacts through changes in river flows and water quality. |

Adaptation to Climate Change

The UK Climate Change Risk Assessment (CCRA) 2017 Evidence Report¹¹¹ presents the Government's second assessment of the risks and opportunities for the UK of the current and predicted impact of climate change, which follows on from the first report published in 2012. It draws primarily on an independent Evidence Report commissioned from the Adaptation Sub-Committee by the UK and the Devolved Governments.¹¹² The assessment findings indicate that the greatest need for early adaptation action (i.e. within the next 5 years) is in the following areas:

- 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, and for agriculture, energy generation and industry
- New and emerging pests and diseases, and invasive non-native species, affecting people, plants and animals
- Risks to natural capital, including terrestrial, coastal, marine and freshwater ecosystems, soils and biodiversity
- Risks to domestic and international food production and trade

¹¹¹ Defra (2017) The UK Climate Change Risk Assessment 2017 Evidence Report <https://www.theccc.org.uk/uk-climate-change-risk-assessment-2017/>

¹¹² Committee on Climate Change (2016) UK Climate Change Risk Assessment 2017 Evidence Report can be accessed at: www.theccc.org.uk/UK-climate-change-risk-assessment-2017/

Future Baseline

Government and international targets indicate significant cuts in greenhouse gas emissions will take place by 2027. The UK is currently projected to meet its first three legislated carbon budget targets (until 2022)¹¹³. Southern Water commit through their latest Annual Report (2020) to focusing on reducing carbon emissions to get closer to net zero, in line with the Water UK Public Interest Commitment to achieve net zero emissions by 2030.¹¹⁴

Objectives are being achieved for many air pollutants (lead, benzene, 1,3-butadiene and carbon monoxide (CO)). Measurements also show that urban background and roadside particulate pollution (PM10) has shown long-term improvement, with stable concentrations observed from 2015 to 2019 for both roadside and urban background sites. A substantial network for fine particulate matter (PM2.5) has been operational since 2009 which shows a similar trend.¹¹⁵

In relation to NO₂, urban background and roadside nitrogen dioxide (NO₂) pollution has shown long-term improvement. There were also on average fewer hours of 'Moderate' or higher levels of nitrogen dioxide pollution in 2019 compared with 2018 at roadside sites. Public transport improvements, national air quality targets and European emissions standards for new vehicles should contribute to further reducing future air quality impacts from motor vehicles. However new development, economic growth and tourism may lead to increased car journeys and congestion leading to localised air quality effects.

Urban background ozone pollution has remained fairly stable between 2003 and 2019 and rural background ozone pollution has shown no clear long-term trend.

The 2018 UK Climate Projections (UKCP18 – which remain the most up-to-date projections currently available for the UK) estimate that summers in the south of England are likely, on average, to be hotter and drier which could affect the frequency and severity of drought events.¹¹⁶

Historic Environment

Baseline

Implementation of drought management measures could affect historic landscape character and historic structures associated with the water environment and the historical context of their setting. Archaeological remains are sensitive to changes in water quality, water levels (for example waterlogged deposits), pollution and land use practices. The study area is rich in heritage with listed buildings, scheduled monuments, conservation areas, registered parks and gardens, registered battlefields, protected wrecks and an internationally recognised World Heritage Site¹¹⁷ (Canterbury Cathedral). Heritage designations within, and intersecting with, the study area is shown in Figure D9 and further detailed in Table D14.

¹¹³ DECC (2015) Updated energy and emissions projections 2015

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

¹¹⁴ Southern Water (2020) Annual Report and Financial Statements for the year ended 31 March 2020

https://www.southernwater.co.uk/media/3632/southernwater_ar2020-150720.pdf

¹¹⁵ Defra (2020) Air Quality in the UK, 1987 to 2019 – Summary <https://www.gov.uk/government/publications/air-quality-statistics/summary>

¹¹⁶ Defra, Department for Business, Energy and Industrial Strategy and The Environment Agency (2020) UK Climate Projections (UKCP) 2018 <https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/index>

¹¹⁷ World Heritage Sites are places of international importance for the conservation of mankind's cultural and natural heritage. The World Heritage List was set up by the World Heritage Convention, established by UNESCO in 1972.

www.english-heritage.org.uk

Figure D9 Heritage Designations

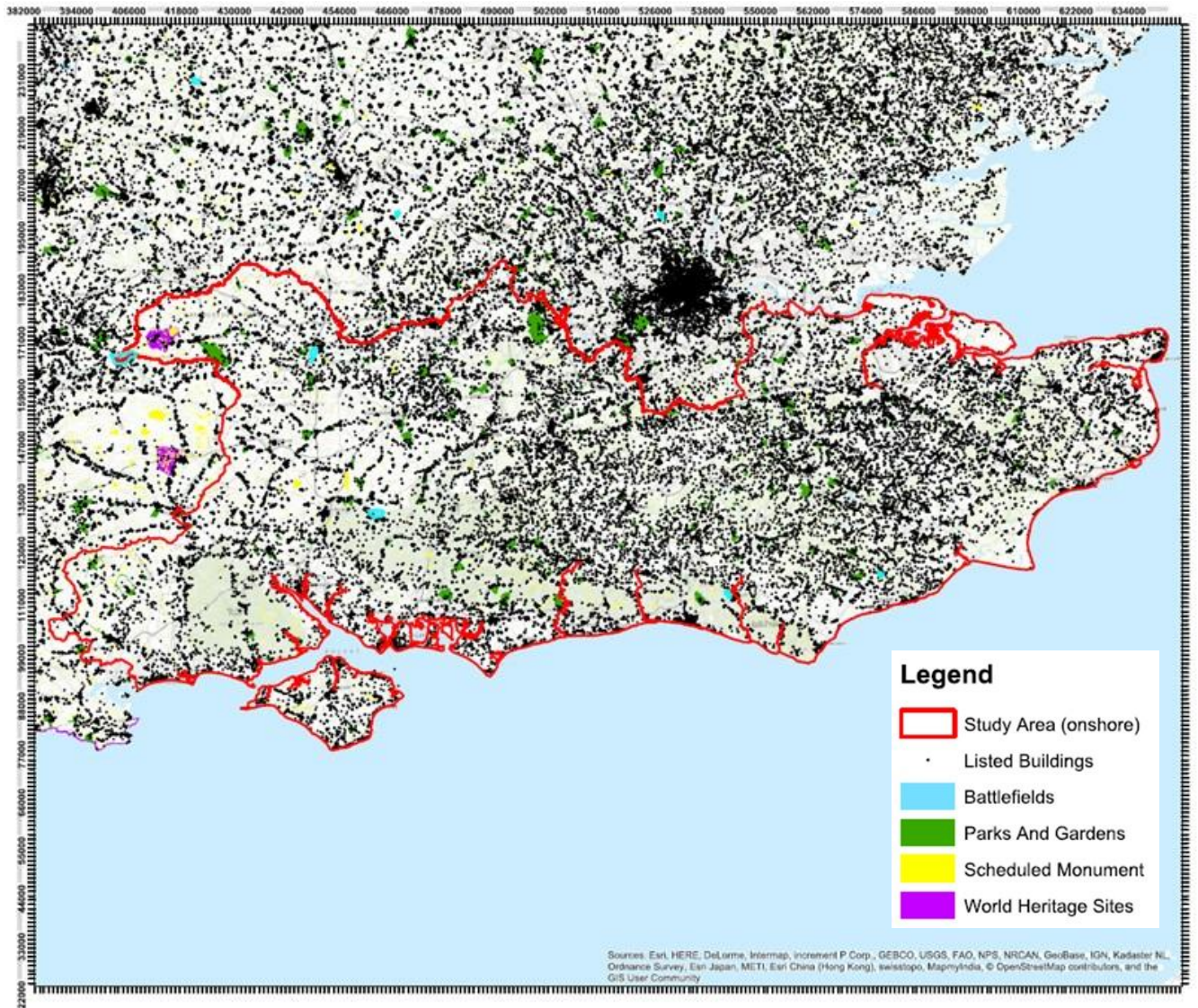


Table D14 Heritage assets within and intersecting with the study area

| Asset | Description | Study Area |
|---------------------|---|------------|
| World Heritage Site | 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. | 2 |
| 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. | 2,732 |
| 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 | 59,589 |

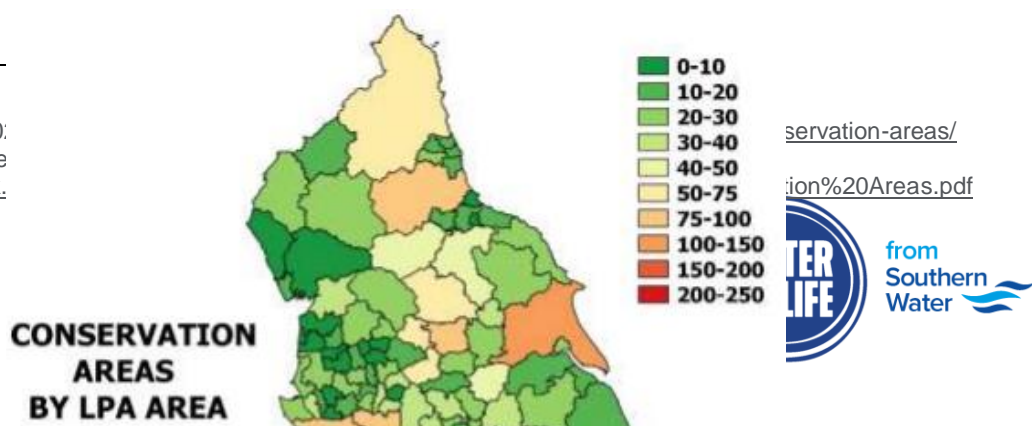
| | | |
|---------------------------------------|---|-----|
| | special architectural or historic interest and each building or structure of interest is classified under one of three Grades; I, II* and II depending on their significance (Grade I assessed as highest significance). | |
| Heritage Coasts | Heritage coasts are 'defined' rather than designated. They were established to conserve the best stretches of undeveloped coast in England. A heritage coast is defined by agreement between the relevant maritime local authorities and Natural England. | 5 |
| Registered Historic 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. | 305 |
| Registered Historic 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. | 5 |
| Protected Historic 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. | 3 |

Conservation Areas are usually designated by the local planning authority, or Historic England (previously known as English Heritage). They are designated for their special architectural and historic interest. Conservation Areas can include historic town and city centres, fishing and mining villages, 18th and 19th century suburbs, model housing estates, country houses set in historic parks and/or historic transport links and their environment.

According to Historic England, there are approximately 10,000 conservation areas in England.¹¹⁸ Data gathered in 2017 (Figure D10) shows the distribution of conservation areas by authority area. In terms of the study area, Figure D10 shows that the City of Canterbury is the only authority area with over 75 conservation areas present. The majority of the study area has relatively low conservation area presence when compared with the rest of the country.

Figure D10 Conservation Areas by Local Planning Authority area (England)¹¹⁹

¹¹⁸ Historic England (2017) <http://www.historicengland.org.uk/conservation-areas/>
¹¹⁹ Leo Hall (2017) <http://www.bedfordpark.com/conservation-areas/>
 240



Individual local authority information will be used to identify specific conservation areas that may be affected by drought management measures.

Historic England collects data on buildings at risk. Within the region of London and the South East, there are currently 1,120 designated assets on the Heritage at Risk (HAR) register.¹²⁰

Historic Environment Record (HER) databases linked to a Geographic Information System (GIS) are held by County Councils, District Councils or Unitary Authorities. They represent unique repositories of, and signposts to, information relating to landscapes, buildings, sites and artefacts spanning from the Palaeolithic period to modern times. Presenting this wealth of information for the study area would be difficult, however, it will be interrogated to assess whether any WRMP24 measures have the potential to affect such assets.

In relation to unknown assets, waterlogged conditions preserve waterlogged archaeology, such as wooden artefacts and structures such as trackways. Remains may be rain-fed or groundwater fed. If the latter, then clearly abstraction levels can be a critical factor in maintaining conditions in which preservation of the remains is viable. In addition, there are waterlogged deposits that are specifically associated with chalk, such as springs and their intimately associated wetlands which again can contain important archaeological information, especially palaeo-environmental evidence. Such water-dependent heritage assets will be considered when assessing potential WRMP24 measures.

¹²⁰ Historic England (2020) Heritage At Risk Register <https://historicengland.org.uk/advice/heritage-at-risk/search-register/results/?advsearch=1®ion=London%20and%20South%20East&searchtype=harsearch>

Future Baseline

Recent and ongoing national economic difficulties may have a negative effect on removing heritage assets from the heritage at risk register. Climate change could have variable impacts on heritage assets in the future. Some types of assets and landscapes have already experienced and survived significant climatic changes in the past and may demonstrate considerable resilience in the face of future climate change. However, many more historic assets are potentially at risk from the direct impacts of future climate change¹²¹.

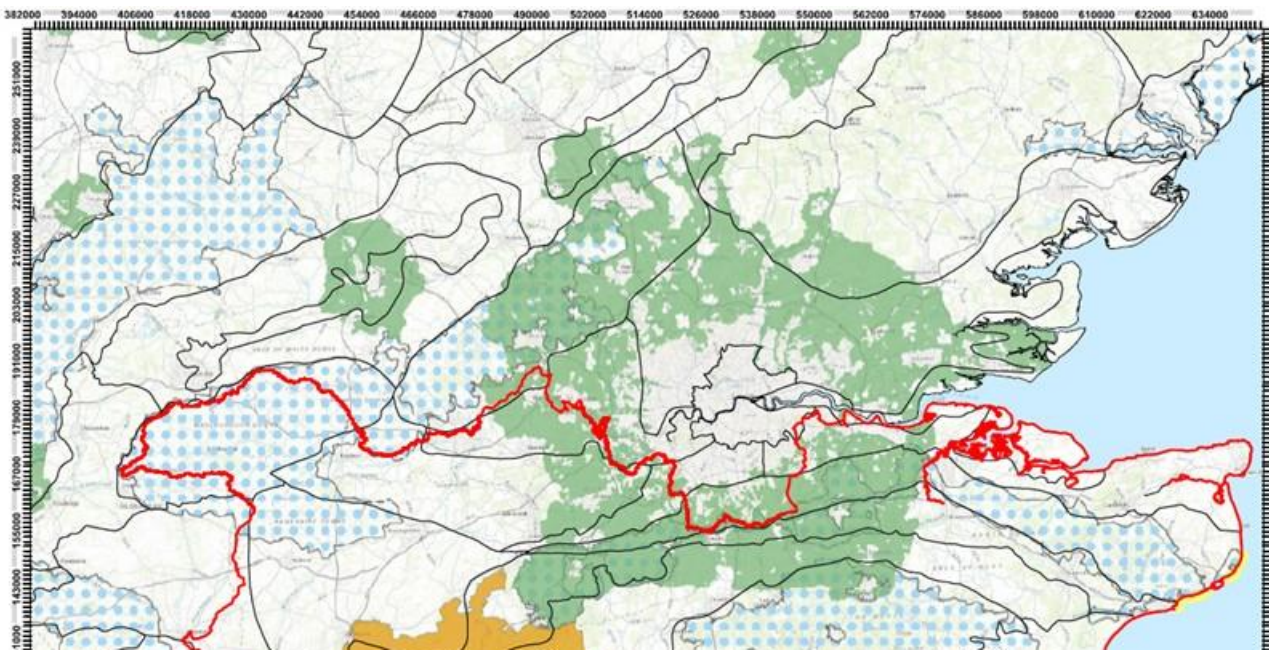
Landscape and Visual Amenity

Baseline

The landscape character network¹²² defines landscape character as 'a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse'. Some landscapes are special because they have a particular amenity value, such as those designated as Areas of Outstanding Natural Beauty (AONB). Others may have an intrinsic value as good examples or be the only remaining examples of a particular landscape type. Some landscapes are more sensitive to development whereas others have a greater capacity to accommodate development. Assessments of landscape character and landscape sensitivity enable decisions to be made about the most suitable location of development to minimise impacts on landscapes.

Implementation of drought options has the potential to influence landscape and visual amenity, for example, effects on water levels in rivers beyond those occurring naturally as a result of the drought alone. Nationally designated landscapes (including AONBs, National Parks and Green Belt) and Natural England National Character Areas (NCAs) are shown on Figure D11 for the study area.

Figure D11 Landscape Designations



Nationally Designated Sites

AONBs are defined as ‘precious landscapes whose distinctive character and natural beauty are so outstanding that it is in the nation's interest to safeguard them’. They are designated under National Parks and Access to the Countryside Act, 1949, strengthened by the Countryside and Rights of Way Act, 2000. The primary purpose of the AONB is ‘to conserve and enhance the natural beauty of the landscape.’ There are eight AONB within or partially within the study area, these are listed below and summarised in Table D15.

- North Wessex Downs
- Isle of Wight
- Chichester Harbour
- Surrey Hills
- Kent Downs
- High Weald
- Cranborne Chase & West Wiltshire Downs
- Dorset (part)

National Parks are areas protected due to their beautiful countryside, wildlife and cultural heritage. The New Forest National Park and South Downs National Park are located within the area. National Parks within, and intersecting with, the study area are detailed in Table D16.

The main characteristics of Green Belt is their openness and their permanence. The main aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open. The Green Belt therefore aims to check the unrestricted sprawl of large built-up areas; prevent neighbouring towns merging into one another; assist in safeguarding the countryside from encroachment; preserve the setting and special character of historic towns; and assist in urban regeneration, encouraging the recycling of derelict and other urban land. Green Belt areas are shown on Figure D11.

Natural England National Character Areas and Heritage Coasts

Natural England National Character Areas also take account of landscape (also referred to in the Biodiversity, Flora and Fauna topic). These are shown geographically in Figure D11, and Table D17 summarises their key features.

A Heritage Coast is a section of coast exceeding one mile in length that is of exceptionally fine scenic quality, substantially undeveloped and containing features of special significance and interest. They are agreed between Natural England and the local authority. These are five Heritage Coast areas shown geographically in Figure D11.

Tranquillity Areas

'Tranquillity' can be defined as the quality of calm that is experienced by people in places full of the sites and sounds of nature. The Campaign for Rural England (CPRE) developed tranquillity mapping for England to identify areas that are either disturbed or undisturbed by urban areas (towns and cities), traffic (road, rail and airports), power stations, pylons, power lines and open-cast mines¹²³.

Future Baseline

The pressures for housing in many parts of the study area, there are likely to be some threats to visual amenity more broadly beyond designated landscape areas (including within Green Belt). Climate change and land use change (e.g. due to agricultural reform associated with the UK's exit from the EU and Common Agricultural Policy) may also, in the longer term, lead to changes to landscape character.

Table D15 Areas of Outstanding Natural Beauty within, and intersecting with, the Southern Water Study Area

| Name of AONB | Key Characteristics |
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¹²³ CPRE tranquillity mapping for England: <http://www.cpre.org.uk/what-we-do/countryside/tranquil-places>
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| <p>Kent Downs</p> | <p>The Kent Downs AONB is a strip of rolling countryside that from Dover on the east coast of England and meets up with the Surrey Hills AONB. Crossed by 3 river valleys – the Darent, the Medway and the Stour. The AONB is orientated SE by NW and follows two ridge outcrops of greensand and chalk. This geology has an impact of the habitats above, and forms healthlands and acid woodlands, and grasslands, scrub and broadleaf woodlands respectively.</p> <p>The Archaeology of the area is very interesting, and the AONB holds the remains of many invasions of England. The area also is home to traditional Kentish orchards and hop gardens.</p> <p>The AONB is flanked by the urban areas of Ashford, Maidstone and Medway towns.</p> <p>The North Downs Way National Trail traverses the back of the escarpment.</p> |
| <p>North Wessex Downs</p> | <p>Includes the uplands of Marlborough, Berkshire and North Hampshire Downs. Richly farmed landscapes including Pewsey Meadows.</p> <p>Includes the Neolithic stone circle at Avebury and other important archaeological sites, as well as the White Horse of Uffington.</p> <p>Recreation resource – at Avebury, also Ridgeway National Trail and Kennet and Avon Canal.</p> |
| <p>Surrey Hills</p> | <p>Predominately made from chalk landscapes, open unimproved heath, deciduous woodland.</p> <p>Recreation resource – Box Hill and Devil’s Punch Bowl, Greensand Way and North Downs National Trail, and ‘Gateway to the South Downs’</p> <p>The urban areas of the area are predominately commuter towns, with transport links to Portsmouth and London</p> |
| <p>Isle of Wight</p> | <p>The Isle of Wight AONB is scattered across the Isle of Wight island, cropping up in the centre and south downlands, and paleontologically important coastline. The AONB is predominately located on the island’s white, chalky upfolds, and include the famous sea stacks of the Needles, and also incorporates the salt marshes and mudflats of the heritage coast as well as chalk downland, arable farmland, wooded dairy pasture, small areas of heathland and hay meadows, sea cliffs and creeks.</p> <p>Four fifths of the island are rural farmland, which is typically heavily weighted to the grazing of sheep and cows.</p> <p>The island is a popular tourist destination, and the Isle of Wight coastal footpath and other trails run through much of the AONB.</p> |
| <p>Chichester Harbour</p> | <p>This AONB is composed of a series of tidal inlets that back onto the South Downs.</p> <p>Mudflats and saltmarshes in the area are home to around 55,000 birds.</p> <p>Many pretty villages are dotted along the coastline, which is also home to 12,500 boats.</p> <p>The village of Selsey boasts some fossil hunting locations. Other leisure activities in the area are those typically associated with the seaside.</p> |
| <p>High Weald</p> | <p>The AONB is composed of remote ancient woodland and patchwork fields which cover rolling hills of sandstone and clay, open heathland, descended of old hunting ground, and scattered farms and hamlets.</p> <p>The area is traversed by the valleys of the Rother, the Brede and the Tillingham rivers.</p> <p>The High Weald is home to many medieval and historically important landscapes.</p> <p>The area depends heavily upon agriculture and forestry, though several commuter towns do exist within its bounds.</p> |

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| Cranborne Chase and West Wiltshire Downs | <p>Cranborne Chase is a chalky landscape with both rolling topography and steeply cut valleys.</p> <p>Wiltshire downs (to the north) consists of large ridges and elegant knolls. Ecologically important area as home to fens and river meadows, deciduous former hunting forests, and ancient downland.</p> <p>The AONB is home to a rich cultural history including C18 and C19 stately homes, ancient monuments and prehistoric archaeological sites.</p> <p>This AONB has a distinct lack of urbanisation, with the main industries being agriculture and forestry.</p> |
| Dorset | <p>The Dorset AONB is made up of inland ridges and valleys, and chalky ridge, limestone plateaus and sand heathland near the coast</p> <p>The Dorset coast is famous for its limestone and sandstone, geology that has formed famous landscapes of Durdle Door, Lulworth Cove and Chesil beach. This geology is often fossiliferous and contains important 185ma vertebrate fossils giving it its name of 'the Jurassic Coast', the first British Natural World Heritage Site.</p> <p>Inland, the heathlands and downlands are scientifically important and contain many SSIs, NNRs and rare flora and fauna as well as many archaeological sites, including the Iron Age fort of Maiden Castle.</p> <p>The area has a strong tourism industry with several million visitors a year, but the main industries are agriculture and mineral related.</p> |

Table D16 National Parks within the Southern Water Study Area

| Name of National Park | Key Characteristics |
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| New Forest | <p>The New Forest National Park includes one of the largest remaining tracts of unenclosed pasture land, heathland and forest in the heavily populated south east of England. It covers southwest Hampshire and extends into southeast Wiltshire and towards east Dorset.</p> |
| South Downs | <p>The South Downs National Park, covers an area of 1,627 km² in southern England, stretching for 140 kilometres from Winchester in the west to Eastbourne in the east through the counties of Hampshire, West Sussex and East Sussex. The national park covers the chalk hills of the South Downs and a substantial part of a separate physiographic region, the western Weald, with its heavily wooded sandstone and clay hills and vales. The South Downs Way spans the entire length of the park and is the only National Trail that lies wholly within a national park.</p> |

Table D17 Natural England National Character Areas (NCAs) within the Southern Water Study Area

| National Character Area Name | Key Characteristics |
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| Chilterns | <p>The Chilterns NCA is a predominantly wooded and farmed landscape with an underlay of chalk bedrock rising from the London Basin and offering wide views over adjacent vales.</p> <p>River Thames breaches escarpment to the south at Goring Gap, flowing past riverside towns such as Henley.</p> <p>The surrounding countryside is an area utilised for agriculture interspersed with woodland and hedged boundaries.</p> <p>Parts of Chilterns area furthest from London are recognised as special and attractive, falling within the Chilterns AONB.</p> <p>Major urban fringe and growth areas such as Luton and Hemel Hempstead are located within the Chilterns NCA, although outside of these AONBs.</p> |

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| <p>North Kent Plain</p> | <p>The North Kent Plain is a strip of open, low and gently undulating land between the Thames Estuary to the north and the chalk of the Kent Downs to the south. It is a highly productive agricultural area with good quality soils used predominately for arable farming.</p> <p>Ancient woodland surrounds Blean, with additional woodland further west. Despite this, the landscape is mostly open and expansive, leading to the area being called as the “Garden of England”.</p> |
| <p>North Downs</p> | <p>Forming a chain of chalk hills, the North Downs NCA extends from Hogs Back in Surrey to the famous White Cliffs of Dover.</p> <p>The settlements in the area consist of traditional small villages and farms while twisting sunken lanes cut across the scarp and are a feature of much of the dip slope. The beauty of the area is reflected by its location within the Kent Downs and Surrey Hills AONB.</p> |
| <p>Thames Basin Lowlands</p> | <p>The Thames Basin Lowlands is a low lying plain situated within the London Basin between the suburbs of South Norwood and Hale, located on the Surrey/Hampshire border.</p> <p>Overall the landscape is largely flat, with small sections of gently undulating land. The underlying geology consists mostly of London Clay, with small outcrops of Bracklesham and Barton Group sand, silt and clay between Esher and Cobham. Part of the North Downs Chalk bedrock, fringed with Thanet Formation and Lambeth Group sediments, underlies Croydon and Sutton.</p> |
| <p>High Weald</p> | <p>High Weald NCA is covered by ancient countryside and cited as one of the best surviving medieval landscapes in northern Europe.</p> <p>It encompasses the ridged and faulted sandstone core of the Kent and Sussex Weald and comprises a mixture of fields, small woodlands and farmsteads with extensive connections to these areas through historic tracks and paths.</p> <p>The majority of the area (78%) is covered by the High Weald AONB with prominent medieval patterns of small pasture fields enclosed by thick hedgerows and shaws (narrow woodlands) remaining fundamental to the character of the landscape.</p> |
| <p>Low Weald</p> | <p>A broad area of low lying clay which wraps around the northern, western and southern edges of the High Weald.</p> <p>Mostly agricultural land able to support pastoral farming as a result of the heavy clay soils, although lighter soils can be found to the east.</p> <p>The landscape is predominantly covered by densely wooded areas with a large amount of ancient woodland.</p> <p>Approximately 9% of the NCA is situated within the adjacent designated Surrey Hills, Kent Downs and High Weald AONB with 23% of the land categorised as greenbelt.</p> |
| <p>Wealden Greensand</p> | <p>Around 25% of the area contains extensive belts of woodland, including ancient woods and more recent conifer plantations. Area also features open areas of heath on acidic soils, river valleys and mixed farming with areas of fruit growing.</p> <p>Over half of area covered by South Downs National Park, Kent Downs AONB and Surrey Hills AONB and serves as a significant place of interest for landscape, geology and biodiversity.</p> <p>Underlying geology has shaped the scarp-and-dip slope topography with clear links apparent between vernacular architecture, industry and local geology.</p> <p>The area accommodates a mix of internationally and nationally designated sites related to biodiversity, including 3 SPAs 2 RAMSAR sites and 8 SACs.</p> |

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| <p>Thames Valley</p> | <p>Majority of the landscape is urban with low lying land situated within a wedge shaped area. It widens from Reading, including Slough, Windsor, the Colne Valley and the southwest London Fringes.</p> <p>Hydrological features are the most prominent within the area and include the Thames and its tributaries, the Grand Union Canal and the reservoirs which form the South-West London Waterbodies SPA and Ramsar site. These features are vital for providing water supply services to London and surrounding suburbs whilst also being crucial for wildlife and recreation.</p> <p>Due to the flood risk, flows and water levels in the River Thames are managed upstream of Teddington. Both flood defence and water quality improvement techniques enhance opportunities for biodiversity and recreation throughout the NCA.</p> |
| <p>Berkshire and Marlborough Downs</p> | <p>A vast area containing arable fields stretching across rolling Chalk hills with scattered settlements. The escarpment provides wide views of the Berkshire and Marlborough Downs with visible landmarks including chalk-cut horse figures, beech clumps and ancient monuments.</p> <p>Avebury stone circle is a popular visitor destination and part of a World Heritage Site, with numerous other Scheduled Monuments and heritage features across the landscape, although Heritage features are at risk from damage by cultivation and animal burrowing.</p> |
| <p>Salisbury Plain and West Wiltshire Downs</p> | <p>An area dominated by its gently rolling chalk downland which forms part of the sweep of Cretaceous Chalk spanning the Dorset coast and across the Chilterns to north of the wash.</p> <p>The area is sparsely populated with a main focus on agriculture. There are few settlements, leading to a vast, open landscape and a strong sense of remoteness</p> <p>The plain is predominantly covered by its chalk grassland, one of the largest remaining areas of calcareous grassland in north western Europe</p> <p>The area is well protected with SPA, SAC and SSSI designations due to its rich populations of stone curlew, hen harrier and rare bumblebee species</p> |
| <p>Greater Thames Estuary</p> | <p>A largely remote and tranquil landscape between the North Sea and rising ground inland, consisting of shallow creeks, drowned estuaries, mudflats and broad tracts of tidal salt marsh.</p> <p>Despite proximity to London, the NCA only has a few major settlements and small villages towards the higher ground. It contains some of the most scarcely populated sections of the English coast and is vastly different to the densely populated urban areas towards London.</p> <p>Sea defences protect large areas of reclaimed grazing marsh and its associated ancient fleet and ditch systems, and productive arable farmland. Historic military landmarks are characteristic features of the coastal landscape.</p> |
| <p>Hampshire Downs</p> | <p>Part of the central southern England belt of chalk, the Hampshire Downs rises 297m in the north-west and is located on the Hampshire-Wiltshire border.</p> <p>A steep scarp to the north delineates the Downs. The area overlooks the Thames Basin the Weald to the east. It is characterised by its elevated, open and rolling landscape covered by large arable fields with low hedgerows on thin chalk soils, scattered woodland blocks and shelterbelts.</p> <p>The Chalk is a large and important aquifer; hence groundwater protection and source inerrability designations cover most of the area. Catchment sensitive farming to control pollution, run-off and soil erosion is a vital activity.</p> <p>The aquifer feeds a number of small streams flowing north and east, although the dominant catchments are those of the rivers Test and Itchen, which flow in straight sided with relatively deeply incised valleys across most of the area.</p> <p>The Itchen is a SAC and the Test a designated SSSI. These rivers, with the watermeadows, peat soils, mires and fens of their flood plains, are the most important habitats of the area.</p> <p>The valleys are home to the main settlements, the local road system and important economic activities such as watercress growing and fly fishing.</p> |

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| <p>Isle of Wight</p> | <p>The Isle of Wight is a 380 km² island separated from the south coast of England by the Solent. It is comprised of packages of farmed arable coastal plains, pastures and woodland, steep chalk downs, diverse estuarine seascapes and dramatic sea cliffs and stacks, such as the needles.</p> <p>The island is scientifically very important. Almost half of the island falls into an AONB, there are 41 SSSI and 395 SINCs, several dark sky observation areas and Special Protection Areas, home to wetland birds, rare invertebrates and rare plants.</p> <p>The geology of the island is diverse, but it is mainly dominated by Paleogene and Cretaceous sediments, often partly comprised of extremely well preserved dinosaur fossils. There are many important bronze age, iron age, and roman archaeological sites are found on the Isle of Wight</p> <p>The predominately rural island also bears host to popular seaside resorts, post-medieval towns, all attracting many tourists to come and visit and try a wide range of leisure activities.</p> |
| <p>New Forest</p> | <p>The New Forest NCA, spanning from the lower Hampshire Avon Valley to industrialised Totton and Fawley is predominately comprised up by the New Forest National Park.</p> <p>The area is a lowland plateau, geologically comprised of Paleogenic deposits overlain by Quaternary gravels, and is home to some bronze age (and onwards) archaeological sites. The areas soils are acidic leading to unique European site habitats.</p> <p>The ancient area has been retained largely due to its designation as a William the Conqueror's royal hunting forest, the survival of grazing as part of a pastoral tradition, ancient Forest Law and more recent conservation policies.</p> <p>The centre of the NCA is comprised of open heathland and woodland where wild pigs and wild horses roam free through ancient oak and beech trees.</p> <p>Major urban areas are located at Ringwood, Fordingbridge and Lymington around the edge of the National Park, and large villages within it, notably Beaulieu, Brockenhurst, Burley, Lyndhurst and Sway. In the south-east the ancient Borough town of Christchurch (in Dorset) has spread to the east, over the Avon, extending in a large area of suburban housing along the coast to New Milton.</p> |
| <p>Pevensy Levels</p> | <p>This predominately rural NCA is a low-lying area is situated in East Sussex between Eastbourne and Bexhill.</p> <p>Over a third of the area is a SSSI and the entire area is a wetland of national and international conservation importance.</p> <p>The south east border is a long coastline of shingle beaches with a huge system of sea defences due to Pevensy Level's high vulnerability to the effects of climate change.</p> <p>The NCA is framed by the steep scarp of the South Downs in the west and the higher ground of the High Weald in the north, with views of the English Channel to the south. The busy Victorian seafront of Eastbourne is the main settlement, attracting over 5 million visitors each year.</p> |
| <p>Romney Marshes</p> | <p>Romney Marshes are a low reclaimed marshland stretching from large shingle beaches, mudflats and coastal habitats of the English Channel over marshland and arable and grazing land to Hythe, Kent and Pett, Sussex. This have been anthropogenically modified via the use of drainage channels, gravel digging, military activity and tourist amenities.</p> <p>The area is scientifically important, and is a SAC, SPC, SSSI and proposed Ramsar site, as well as being home to some of the UK's rarest species. The NCA acts as a corridor between other important habitats, such as the High Weald and the valleys of Rother and Brede</p> |

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| <p>South Coast Plain</p> | <p>The South Coast Plain is a flat coastal landscape nestled between the dip slope of the South Downs and South Hampshire lowlands and the English Channel, the Solent and Southampton Water.</p> <p>The area is significantly urbanised, and hosts the site of the Portsmouth conurbation and a handful of large seaside towns which heavily rely on protection from the sea. The economies of these areas are intricately linked to marine and recreational activities.</p> <p>A very small percentage of the South Coast Plain is comprised of SSSIs. The area also hosts four SPAs, two SAC and four Ramsar sights.</p> <p>Despite the urban build up, the coastal area feels wide and open. The Isle of Wight can be seen from many places along the South Coast Plain.</p> |
| <p>The South Downs</p> | <p>The striking open rolling chalk hills and the remote woodland of the South Downs stretches across a spine of chalk from the Hampshire downs on the west and coastal cliffs of East Sussex in the East.</p> <p>The area is only eight percent urbanised, although the rest of the NCA is largely influenced by agriculture and forestry. The South Downs Way National Trail stretches along the back of the northern scarp, and attracts many cyclists, hikers and horse riders.</p> <p>The Cretaceous chalk of the South Downs is very permeable and absorbs much of the rain in the NCA, replenishing the chalk aquifer below. This aquifer is often under stress as it supplies Brighton and surrounding areas.</p> <p>The coast of the South Downs often hosts a clifly landscape, and a small portion of the NCA is recognised as heritage coast.</p> |
| <p>South Hampshire Lowlands</p> | <p>The South Hampshire Lowlands NCA stretches from Hampshire and the South Downs to Southampton Water.</p> <p>The large urban area of Southampton and its surrounding areas fills just under a third of the NCA. Otherwise the area is comprised of farmland, wetland and woodland. Much of this woodland is ancient, a legacy of the Forest of Bere, a Royal Hunting Forest that once spanned area. This woodland can be seen at West Walk near Wickham, Botley Wood at Swanwick and Ampfield Wood near Romsey.</p> <p>The mudflat and salt marsh wetlands of the area are home to breeding and overwintering waterfowl and waders. Three Habitats' sites cover parts of the area. The delicate and unique river areas of this NCA are home to otters.</p> <p>The geology of the South Hampshire Lowlands is mainly consisting of open marine, estuarine and freshwater Tertiary deposits.</p> |
| <p>Thames Basin Heaths</p> | <p>The Thames Basin Heaths covers westwards from Weybridge, Surrey to the countryside around Newbury in Berkshire. The London greenbelt incorporates countryside around Chobham and the River Wey and River Mole.</p> <p>The NCA housing the large urban conurbations of Bracknell and Camberley and the large M25 and M3 road network.</p> <p>Away from London, the settlement pattern is a mix of dispersed hamlets, farmsteads and houses interspersed with villages, and as well as parkland, ancient woodland and semi-natural grassland.</p> <p>A quarter of the NCA is woodland, with the majority planted on former heathland, commonly comprised of rhododendron and conifers.</p> <p>Common land is found across the NCA on deposits of Tertiary sands and gravels, leading to only rough pasture. Other land uses include military bases such as Aldershot, and plantations.</p> <p>Wilder areas are formed by wet and dry heathland, and are of international importance and are protected by SSSI and SAC statuses. These areas provide habitats for nightjars, Dartford warblers and woodlarks. Due to their proximity with urban settlements these areas often suffer from fly tipping and arson.</p> |

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| <p>Blackmoor Vale and the Vale of Wardour</p> | <p>To the south of this NCA there is Upper Greensand Terraces and a wide expanse lowland clay vale. The NCA expands to the north to the edge of Salisbury Plain and West Wiltshire Down NCA.</p> <p>The fertile area of the terraces is the site of several stately homes and their estates of parks and woodland.</p> <p>Blackmore vale has many veteran hedgerow trees and hedgefields which often become waterlogged due to the pattern of overlapping rivers and streams.</p> <p>Urban areas comprised of large towns (e.g. Sturminster Newton and Gillingham) making the area 1% urbanised, many small towns, villages and hamlets, some of which are medieval.</p> <p>Disused quarries show the Jurassic and Cretaceous geology of the area.</p> |
| <p>Dorset Downs and Cranbourne Chase</p> | <p>Spans within the counties of Dorset, Wiltshire and Hampshire.</p> <p>Heavily agricultural NCA due to large open arable and pasture fields. The NCA is very rural with a low population density. The largest towns are Dorchester and Blandford Forum.</p> <p>The NCA is also blanketed by pockets of woodland, with the entire area overlaying Cretaceous chalk.</p> <p>The area is archeologically important and shows evidence of Mesolithic activity (8000 years ago).</p> <p>15km long transect of the South West Coast Path National Trail runs through this NCA.</p> |
| <p>Dorset Heaths</p> | <p>This NCA overlaps the towns of Poole, Bournemouth and Christchurch.</p> <p>The area is scientifically important, and contains a number of SPAs due to the presence of rare reptiles, insects, birds and heathland.</p> <p>Major land uses include agriculture, military training and open cast mineral working.</p> <p>Tourism is a major industry within the area, attracting visitors to archetypical sandy beaches.</p> |
| <p>Inner London</p> | <p>The Inner London NCA lies at the centre of the Thames Basin and is characterised by a series of flood plain terraces.</p> <p>Rare open spaces, such as reservoirs and wetland areas (e.g. the Lea Valley) within the NCA provide space for leisure activities in an otherwise urban area.</p> <p>The area bares a long and rich cultural history which has carried forward into the present day, and is now a major hub for international business and tourism.</p> <p>Due to the heavy urbanisation, the area is heavily dependent on transport schemes, such as a complex subterranean tunnel system, and ecosystem services such as flood alleviation.</p> |

Appendix E Summary of Preferred Options by WRZ

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|--------------------|--|---|--|--------------|------------------------|
| Sussex North (SNZ) | SWS_SNZ_RE-DRO_ALL_ALL_si_har_2 | Drought option: Pulborough surface water (Phases 1 to 3) Drought Permit/Order (2025 onwards) (23MI/d) | Pulborough surface water (Phases 1 to 3) Drought permit/order (2025 onwards) | 23.00 | 2026 |
| Sussex North (SNZ) | SWS_SNZ_RE-OTH_ALL_ALL_neub-sn | Drought option: NEUBs - SNZ | Non-essential use ban - SNZ WRZ | 2.41 | 2026 |
| Sussex North (SNZ) | SWS_SNZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - SNZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.11 | 2028 |
| Sussex North (SNZ) | SWS_SNZ_RE-OTH_ALL_ALL_tub-sn | Drought option: TUBs - SNZ | Temporary use bans - SNZ WRZ | 4.01 | 2026 |
| Sussex North (SNZ) | SWS_SNZ_RE-DRO_ALL_ALL_si_wei_2 | Drought option: Weir Wood reservoir Drought Permit/Order (2025 onwards) (3.1MI/d) | Drought option: The Company can apply for a Drought Permit or Order to reduce the compensation flow from Weir Wood reservoir to maintain water levels. This is a possibility for both summer and winter conditions but typically will only be sought when a specific drought issue is affecting the integrity of the reservoir. This Drought Permit is concerned with a reduction in compensation flow from Weir Wood Reservoir and Weir Wood WSW to maximise available resources for public water supply | 3.14 | |
| Sussex North (SNZ) | SWS_SNZ_HI-ROC_RE1_ALL_hsb-rcm | Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d) | Petworth WSW - return WSW to service with a new borehole. The option is to drill a new replacement borehole for Petworth WSW in Sussex North Area. Borehole to be minimum c. 300mm dia ID, and c. 80m depth. | 4.00 | 2044 |
| Sussex North (SNZ) | SWS_SNZ_HI-IMP_PRT_ALL_pwh | Import: PWC to Pulborough (15MI/d) | Import from Portsmouth Water at Pulborough | 15.00 | 2027 |
| Sussex North (SNZ) | SWS_SNZ_HI-REU_RE1_ALL_for20 | Recycling: Ford WwTW (15MI/d) | This scheme proposes the transfer of treated effluent from Ford WwTW to a new discharge point to the western River Rother upstream of the Pulborough WSW abstraction. This would support flows over the Pulborough wiew as the MRF is approached, therefore prolong production at Pulborough during a drought.20MI/d represents the upper end of the reliable flow that could be expected from Ford WwTW. Once abstracted at Pulborough WSW this water would be used to meet demand in the Sussex North WRZ. | 14.96 | 2028 |
| Sussex North (SNZ) | SWS_SNZ_HI-REU_RE1_ALL_env_cu_chu2_conju | Recycling: Horsham WTW conjunctive use with Church Farm, Pulborough (6.8MI/d) | New resource. This option is a new 9.5MI/d water recycling plant producing a DO of 6.8MI/d near Horsham WwTW and a transfer of the treated effluent to Church Farm reservoir, which feeds into Pulborough WSW. Process losses have been included. | 11.50 | 2055 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|-----------------------|---|---|--|--------------|------------------------|
| Sussex North (SNZ) | SWS_SNZ_HI-RSR_RE1_ALL_bla | Storage: River Adur offline Reservoir (19.5MI/d) | The option involves the construction of an earth embankment reservoir at Blackstone with a proposed storage capacity of up to 4,600 MI. The option will allow treated water to enter the distribution network to supply either the Sussex coastal block or the Pulborough area. The reservoir will be filled with water pumped from the eastern branch of the river Adur. The abstraction of raw water from the river to the reservoir would have a maximum flow of 30MI/d. | 19.50 | 2045 |
| Sussex North (SNZ) | SWS_SNZ_HI-IMP_SWZ_ALL_rrn | Transfer: Rock Road bi-directional transfer (SWZ-SNZ) (15MI/d) | Rock Road bi-directional transfer (SWZ-SNZ) | 15.00 | 2026 |
| Sussex North (SNZ) | SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30 | Pulborough to Tenants Hill Worthing: 30MI/d | Additional pipeline to provide extra capacity. | 40.00 | 2040 |
| Sussex North (SNZ) | SWS_SNZ_HI-TFR_PWE_ALL_havant-hardha r 20 | Havant Thicket To Pulborough WTW: 20MI/d | A bidirectional raw water transfer from Pulborough to Havant Thicket. INNS treatment to be provided at Pulborough. | 10.00 | 2050 |
| Sussex North (SNZ) | SWS_SNZ_HI-TFR_PWE_ALL_havant-hardha r 50 | Havant Thicket To Pulborough WTW: 50MI/d | A bidirectional raw water transfer from Pulborough to Havant Thicket. INNS treatment to be provided at Pulborough. | 50.00 | 2040 |
| Sussex North (SNZ) | Outwood To Turners Hill: 10MI/d | Outwood To Turners Hill: 10MI/d | Proposed new transfer from Outwood To Buchen Hill, Crawley. 10MI/d transfer flow rate | 10.00 | 2031 |
| Sussex North (SNZ) | Tilmore to Pulborough: 10MI/d | Tilmore to Pulborough: 10MI/d | A transfer between Tilmore and Pulborough | 10.00 | 2031 |
| Sussex Worthing (SWZ) | SWS_SWZ_HI-DES_ALL_ALL_aru10 | Desalination: Tidal River Arun (10MI/d) | This option proposes a desalination plant to treat estuarine water from the tidal River Arun to supply treated water to the Sussex Worthing WRZ. It is assumed that the water could be used during drought conditions to meet demand in Sussex Worthing WRZ. There is bi-directional transfer between Sussex Worthing WRZ and Sussex North WRZ which means this option could have result in additional benefit to Sussex North WRZ. An investigation in AMP4 indicated that land adjacent to Ford WWTW showed the greatest potential for a new desalination site because of the existing land use, the availability of services (access roads, power, etc.) and the potential savings if it is possible to use Ford's existing long-sea outfall. | 10.00 | 2062 |
| Sussex Worthing (SWZ) | SWS_SWZ_RE-DRO_ALL_ALL_si_mad_2 | Drought option: North Arundel Drought Permit/Order (2025 onwards) (2.5MI/d) | Drought option: Under more severe droughts, where resources in Sussex Coast themselves are under threat, and drought measures in Sussex North (such as the Pulborough MRF reduction) are not sufficient or suitable to address the situation, then a drought permit/order may be sought to increase licensed abstraction at North Arundel. The proposed drought option involves increasing groundwater abstraction at North Arundel PS through the application for and implementation of a Drought Order. This source typically pumps at 4.5MI/d and is constrained by the licence. The drought action would seek to increase the daily abstraction rate by 2.5MI/d to 7MI/d, which is the peak deployable output | 2.50 | 2026 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|-----------------------|---|---|--|--------------|------------------------|
| | | | of the source. Increasing the abstraction from North Arundel will provide additional supply for Sussex Coast and possibly support bulk transfers to Sussex North. However, this is only a severe drought option due to the sensitivity of Swanbourne Lake. | | |
| Sussex Worthing (SWZ) | SWS_SWZ_RE-DRO_ALL_ALL_si_mad_2_v2 | Drought option: North Arundel Drought Permit/Order (2025 onwards) (2.5MI/d) | Drought option: Under more severe droughts, where resources in Sussex Coast themselves are under threat, and drought measures in Sussex North (such as the Pulborough MRF reduction) are not sufficient or suitable to address the situation, then a drought permit/order may be sought to increase licensed abstraction at North Arundel. The proposed drought option involves increasing groundwater abstraction at North Arundel PS through the application for and implementation of a Drought Order. This source typically pumps at 4.5MI/d and is constrained by the licence. The drought action would seek to increase the daily abstraction rate by 2.5MI/d to 7MI/d, which is the peak deployable output of the source. Increasing the abstraction from North Arundel will provide additional supply for Sussex Coast and possibly support bulk transfers to Sussex North. However, this is only a severe drought option due to the sensitivity of Swanbourne Lake. | 2.50 | tbc |
| Sussex Worthing (SWZ) | SWS_SWZ_RE-OTH_ALL_ALL_neub-sw | Drought option: NEUBs - SWZ | Non-essential use ban - SWZ WRZ | 1.63 | 2026 |
| Sussex Worthing (SWZ) | SWS_SWZ_RE-DRO_ALL_ALL_dp_nor_2 | Drought option: East Worthing Drought Permit/Order (2025 onwards) (2.5MI/d) | East Worthing Drought permit/order (2025 onwards) | 2.50 | 2033 |
| Sussex Worthing (SWZ) | SWS_SWZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - SWZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.07 | 2028 |
| Sussex Worthing (SWZ) | SWS_SWZ_RE-OTH_ALL_ALL_tub-sw | Drought option: TUBs - SWZ | Temporary use bans - SWZ WRZ | 2.71 | 2026 |
| Sussex Worthing (SWZ) | SWS_SWZ_HI-LRE_ALL_ALL_har1 | Transfer: Pulborough winter transfer stage 1 - Provision of a permanent sludge treatment facility at Pulborough WSW (2MI/d) | During the winter there is surplus surface water within the River Rother. This scheme would allow the surplus to be used at Pulborough WSW (within licence constraints) which in turn would allow coastal groundwater sources to be rested. This increase in groundwater can be utilised through new transfer mains from Tenants Hill to Brighton A WSR via Shoreham WSW, providing the additional 2MI/d of water to Brighton WRZ during the summer and autumn of a drought year. This is Phase 1, which is to provide a permanent sludge treatment facility at Pulborough WSW. | 2.00 | 2031 |
| Sussex Worthing (SWZ) | SWS_SWZ_HI-TFR_SNZ_ALL_Pulborough-tenant p 30 | Pulborough to Tenants Hill Worthing: 30MI/d | Additional pipeline to provide extra capacity. | 40.00 | 2040 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|-----------------------|-------------------------------------|--|--|--------------|------------------------|
| Sussex Brighton (SBZ) | SWS_SBZ_HI-DES_ALL_ALL_shom10 | Desalination: Sussex Coast (Modular 0-10MI/d) (10MI/d) | A site in Shoreham Harbour was identified as a the most feasible location for a coastal desalination plant that could supply the Central Area WRZs. The new desalination plant would be constructed within the site of an existing power station and make use of its abstraction and discharge structures. The treated water would be supplied to the Sussex WRZ distribution network. | 10.00 | 2028 |
| Sussex Brighton (SBZ) | SWS_SBZ_HI-DES_ALL_ALL_shom20 | Desalination: Sussex Coast (Modular 10-20MI/d) (10MI/d) | A site in Shoreham Harbour was identified as a the most feasible location for a coastal desalination plant that could supply the Central Area WRZs. The new desalination plant would be constructed within the site of an existing power station and make use of its abstraction and discharge structures. The treated water would be supplied to the Sussex WRZ distribution network. | 10.00 | 2042 |
| Sussex Brighton (SBZ) | SWS_SBZ_HI-DES_ALL_ALL_shom40 | Desalination: Sussex Coast (Modular 10-20MI/d) (40MI/d) | A site in Shoreham Harbour was identified as a the most feasible location for a coastal desalination plant that could supply the Central Area WRZs. The new desalination plant would be constructed within the site of an existing power station and make use of its abstraction and discharge structures. The treated water would be supplied to the Sussex WRZ distribution network. | 40.00 | 2057 |
| Sussex Brighton (SBZ) | SWS_SBZ_RE-OTH_ALL_ALL_neub-sb | Drought option: NEUBs - SBZ | Non-essential use ban - SBZ WRZ | 3.04 | 2026 |
| Sussex Brighton (SBZ) | SWS_SBZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - SBZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.16 | 2028 |
| Sussex Brighton (SBZ) | SWS_SBZ_RE-OTH_ALL_ALL_tub-sb | Drought option: TUBs - SBZ | Temporary use bans - SBZ WRZ | 5.06 | 2026 |
| Sussex Brighton (SBZ) | SWS_SBZ_EF-TFR_REP_ALL_har2_res | Transfer: Pulborough winter transfer stage 2 - New main between Shoreham WSW/North Shoreham WSW and Brighton A WSR (4MI/d) | Pulborough Winter Supply | 3.00 | 2041 |
| Sussex Brighton (SBZ) | SWS_SBZ_HI-TFR_SWZ_ALL_v6b_2026 | Transfer: SWZ-SBZ additional through v6 valve (13MI/d) | Trunk main at v6 valve (SWZ to SBZ) additional capacity (from 2026/27) (negates need for IZT_Har3) | 13.00 | 2026 |
| Sussex Brighton (SBZ) | SWS_SBZ_HI-TFR_SWZ_ALL_v6b | Transfer: SWZ-SBZ v6 valve (17MI/d) | Trunk main at v6 valve (SWZ to SBZ) | 17.00 | 2026 |
| Sussex Hastings (SHZ) | SWS_SHZ_RE-DRO_ALL_ALL_si_dar2 | Drought option: Darwell Reservoir (stages 1 (freshet removal) to 3) Drought Permit/Order (2025 onwards) (1.2MI/d) | Drought option: The drought order involves a proposed reduction in the statutory Minimum Residual Flow (MRF) as gauged at the Robertsbridge flow gauging weir on the River Rother. MRF would be reduced to 10MI/d to enable abstraction to take place when flows are sufficiently high. The proposed drought order reduction varies depending on the time of year. The drought order would be sought in order to increase the volume of water available for abstraction at | 3.10 | 2040 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------------|--|--|--|--------------|------------------------|
| | | | the Robertsbridge intake to pump up to Darwell Reservoir to augment the remaining storage. The drought order will influence flows in the watercourses downstream of Robertsbridge. | | |
| Sussex Hastings (SHZ) | SWS_SHZ_RE-OTH_ALL_ALL_neub-sh | Drought option: NEUBs - SHZ | Non-essential use ban - SHZ WRZ | 0.30 | 2026 |
| Sussex Hastings (SHZ) | SWS_SHZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - SHZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.05 | 2028 |
| Sussex Hastings (SHZ) | SWS_SHZ_RE-OTH_ALL_ALL_tub-sh | Drought option: TUBs - SHZ | Temporary use bans - SHZ WRZ | 0.90 | 2026 |
| Sussex Hastings (SHZ) | SWS_SHZ_HI-GRW_ALL_ALL_ass_br_bre_eastn | Groundwater: Rye reconfiguration (1.5Mld) | Brede groundwater source is a well & adit system that is over 100 years old, and has reached the end of its asset life. It abstracts from the Ashdown Beds. Operational wells 1 and 3 are to be replaced by boreholes. Additional land may be required for at least one of the boreholes due to space constraints on site. Wells 2 and 4 are out of service and do not require replacement. Scheme output is 1.5MI/d. There is an existing surface water WSW on site and no further treatment is required. | 1.50 | 2041 |
| Sussex Hastings (SHZ) | SWS_SHZ_HI-REU_RE1_ALL_dar10 | Recycling: Bexhill and Hastings WwTW to augment storage in Darwell reservoir (9.5MI/d) | This option proposes the transfer of treated effluent from Bexhill & Hastings WWTW, currently being discharged to sea at Pebsham Gap, in order to augment storage in Darwell reservoir. This option includes tertiary treatment of Bexhill & Hastings wastewater, this may include Membrane Bio Reactors and Reverse Osmosis. Additional GAC and UV treatment may be required at Brede WSW. | 9.47 | tbc |
| Sussex Hastings (SHZ) | SWS_SHZ_HI-REU_RE1_ALL_env_cu_bew1_conju | Recycling: Tunbridge Wells WTW conjunctive use with Bewl reservoir (3.6MI/d) | New resource. This option is a new 5MI/d water recycling plant producing a DO of 3.6MI/d near Tunbridge Wells WwTW and a transfer of the treated effluent to Bewl reservoir, which feeds Darwell reservoir, Bewl WSW and Near Rochester WSW. Process losses have been included. | 4.50 | 2046 |
| Hants Southampton East (HSE) | SWS_HSE_RE-DRO_ALL_ALL_si_can2 | Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d) | To allow up to 27MI/d and 3750MI/year (average of 20.8MI/d over 6 months) to be abstracted from the Preston Candover boreholes. Abstraction would be increased over a period of several days up to the full required discharge rate so as to prevent a sudden increase in flow in the River Itchen. Abstraction and discharges will only be permitted when flows in the River Itchen at Allbrook and Highbridge are at or below a trigger flow of 220MI/d. 2MI/d environmental support (within the limits above) at the existing discharge to the Candover Stream. Operated during, and potentially after, discharges to the River Itchen. | 14.37 | 2028 |
| Hants Southampton East (HSE) | SWS_HSE_RE-DRO_ALL_ALL_si_ott2 | Drought option: Lower Itchen (g/w and s/w sources) Drought | Increase current licenced quantity. The implementation of the drought permit would result in a major adverse effects on flows in the River Rother in summer. There would be associated moderate adverse impact on water quality and | 38.00 | tbc |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------------|-------------------------------------|---|---|--------------|------------------------|
| | | Permit/Order (from 2027 onwards) (61.5MI/d) | ecology, notably migratory fish and the Least Water Snipe Fly. The reduction in river flows and levels would have a minor adverse effect on visual amenity. | | |
| Hants Southampton East (HSE) | SWS_HSE_RE-OTH_ALL_ALL_neub-hse | Drought option: NEUBs - HSE | Non-essential use ban - HSE WRZ | 3.45 | 2026 |
| Hants Southampton East (HSE) | SWS_HSE_RE-DRO_ALL_ALL_do_sis_westi | Drought option: Reduce HoF at Lower Itchen sources (38MI/d) | Drought Order to reduce the proposed abstraction licence 'hands off' flow condition from 198MI/d to 160MI/d, as measured at Allbrook and Higbridge gauging station and Drought Order to reduce the 'hands off' flow condition from 194MI/d to 150MI/d, as measured at Portsmouth Water's Lower Itchen abstraction licence gauging station | 0.00 | 2026 |
| Hants Southampton East (HSE) | SWS_HSE_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - HSE | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.20 | 2028 |
| Hants Southampton East (HSE) | SWS_HSE_RE-OTH_ALL_ALL_tub-hse | Drought option: TUBs - HSE | Temporary use bans - HSE WRZ | 5.75 | 2026 |
| Hants Southampton East (HSE) | SWS_HSE_HI-TFR_PRT_ALL_pwc2 | Import: PWC Import from Portsmouth Water (21MI/d) | Additional 21MI/d using a new pipeline from Gater's Mill to Otterbourne, dependent on resource development (Havant Thickett reservoir) by PWC. 22 h/d operation assumed. | 21.00 | 2030 |
| Hants Southampton East (HSE) | SWS_HSE_EF-TFR_REP_ALL_pwc1 | Import: PWC Import from Portsmouth Water (9MI/d) | Additional 9MI/d bulk import from PWC Import from Portsmouth Water to Otterbourne distribution network using spare capacity of existing 30MI/d main, dependent on resource development (World's End WTW) by PWC. 22 h/d operation assumed. | 9.00 | 2026 |
| Hants Southampton East (HSE) | SWS_HSE_HI-IMP_PRT_ALL_pwg | Import: PWC Import from Portsmouth Water source to Moor Hill reservoir (30MI/d) | Import from Portsmouth Water's Gater's Mill source to Moor Hill reservoir | 30.00 | 2030 |
| Hants Southampton East (HSE) | SWS_HSE_EF-TFR_REP_ALL_pwg_re_s2 | Import: PWC Import from Portsmouth Water Source to Moor Hill reservoir extension (30MI/d) | Extension of Bulk Transfer agreement - Import from Portsmouth Water's Gater's Mill Source to Moor Hill Reservoir | 24.00 | 2030 |
| Hants Southampton East (HSE) | SWS_HSE_HI-REU_RE1_ALL_wol8 | Recycling: Woolston WwTW (7.1MI/d) | This option is for additional treatment to the effluent at Woolston WwTW and sending this to Otterbourne WSW (circa 7.5MI/d), from where it is sent to discharge to the River Itchen upstream of the abstraction for Import from Portsmouth Water WSW. The scheme also involves discharge pipe from Otterbourne WSW to the River Itchen. | 7.10 | Tbc |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------------|--|---|--|--------------|------------------------|
| Hants Southampton East (HSE) | SWS_HSE_HI-TFR_HRZ_ALL_sla | Transfer: Sandy Lane Abbotswood (HSE-HRZ) (1.1MI/d) | Sandy Lane Abbotswood | 1.10 | 2026 |
| Hants Southampton East (HSE) | SWS_HSE_HI-ROC_WT1_ALL_cpy_ott_30 | Treatment capacity: Upgrade Otterbourne WSW (30MI/d) | 30MI/d treatment train of surface water, possible augmented with Recycled Water. This would be a separate process stream from the existing raw water feed through to delivery to the network. | 30.00 | 2031 |
| Hants Southampton East (HSE) | SWS_HSE_HI-TFR_T2S_CNO_spar to ott 120 pot | Sparsholt to Otterbourne (120) Potable - Construction | Sparsholt to Otterbourne (120) Potable | 120.00 | 2040 |
| Hants Southampton East (HSE) | SWS_HSE_HI-TFR_T2S_CNO_spar to ott 50 pot | Sparsholt to Otterbourne (50) Potable - Construction | Sparsholt to Otterbourne (50) Potable | 50.00 | 2040 |
| Hants Southampton East (HSE) | Otterbourne to Gaters Mill: 45MI/d | Otterbourne to Import from Portsmouth Water: 45MI/d | A pipe connecting SWS Otterbourne WSW to PWC Gater's Mill WSW | 45.00 | 2049 |
| Kent Medway East (KME) | SWS_KME_HI-DES_ALL_ALL_ios10 | Desalination: Isle of Sheppey (10MI/d) | This option proposes a 10MI/d desalination plant to meet demand on the Isle of Sheppey. Locating a desalination plant on the Isle of Sheppey has a clear advantage: it would meet local demand while significantly reducing the need for transfers along the main from Deans Hill BPT. This option could be enhanced to transfer treated water from the Isle of Sheppey to the wider Kent-Medway WRZ. A number of sites for a desalination plant were investigated and the most suitable would be located on land south of Sheerness Docks, currently used for storage of car imports. Water treated at this site would then be pumped to Southdown WSR and Kins Borough WSR on the island for distribution to customers. This site will be investigated further in the feasibility appraisal. | 10.00 | 2057 |
| Kent Medway East (KME) | SWS_KME_HI-DES_ALL_ALL_ios20 | Desalination: Isle of Sheppey (20MI/d) | This option proposes a 10MI/d desalination plant to meet demand on the Isle of Sheppey. Locating a desalination plant on the Isle of Sheppey has a clear advantage: it would meet local demand while significantly reducing the need for transfers along the main from Deans Hill BPT. This option could be enhanced to transfer treated water from the Isle of Sheppey to the wider Kent-Medway WRZ. A number of sites for a desalination plant were investigated and the most suitable would be located on land south of Sheerness Docks, currently used for storage of car imports. Water treated at this site would then be pumped to Southdown WSR and Kins Borough WSR on the island for distribution to customers. This site will be investigated further in the feasibility appraisal. | 20.00 | 2049 |
| Kent Medway East (KME) | SWS_KME_HI-DES_ALL_ALL_ios20_p2 | Desalination: Isle of Sheppey (20MI/d) Phase 2 | This option proposes a 10MI/d desalination plant to meet demand on the Isle of Sheppey. Locating a desalination plant on the Isle of Sheppey has a clear advantage: it would meet local demand while significantly reducing the need for transfers along the main from Deans Hill BPT. This option could be enhanced to transfer treated water from the Isle of Sheppey to the wider Kent-Medway WRZ. A number of sites for a desalination plant were investigated and the most suitable | 20.00 | 2057 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------|--|--|--|--------------|------------------------|
| | | | would be located on land south of Sheerness Docks, currently used for storage of car imports. Water treated at this site would then be pumped to Southdown WSR and Kins Borough WSR on the island for distribution to customers. This site will be investigated further in the feasibility appraisal. | | |
| Kent Medway East (KME) | SWS_KME_RE-OTH_ALL_ALL_neub-kme | Drought option: NEUBs - KME | Non-essential use ban - KME WRZ | 0.93 | 2026 |
| Kent Medway East (KME) | SWS_KME_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - KME | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.10 | 2028 |
| Kent Medway East (KME) | SWS_KME_RE-OTH_ALL_ALL_tub-kme | Drought option: TUBs - KME | Temporary use bans - KME WRZ | 2.80 | 2026 |
| Kent Medway East (KME) | SWS_KME_HI-GRW_ALL_ALL_nw_gw_a_win_eastn | Groundwater: Recommission Gravesend source (2.7MI/d) | Gravesend source is a well and adit system that was decommissioned in 2007 due to high nitrate levels. A new nitrate treatment plant was constructed on site in 2006. A Source Investigation & Optimisation Study (SIOS) by Atkins in 2008 suggests that the nitrate problem was likely to be a faulty nitrate monitor. The report recommends a) Undertake a long-term step test with steps of seven days duration at rates of 3.0MI/d, 3.3MI/d and maximum pump capacity (approximately 3.66MI/d) subject to stabilisation of pumping water levels during each step b) Recalibrate or repair the online raw water nitrate monitor, c) Modify the cover to the satellite well chamber to facilitate improved access Refurbishment of the existing nitrate plant will be required. Scheme Output: 5MI/d | 2.65 | 2040 |
| Kent Medway East (KME) | SWS_KME_HI-REU_RE1_ALL_sit8 | Recycling: Sittingbourne industrial reuse (7.5MI/d) | This option is to use the reuse scheme to free up additional volume in DS Smith borehole licence to increase the scope of the licence trading. DS Smith utilises the groundwater in its paper/board making processes. It has been assumed at this stage that the RO wastewater can be discharged through Sittingbourne WwTW existing outfall. . | 7.50 | 2031 |
| Kent Thanet (KTZ) | SWS_KTZ_HI-DES_ALL_ALL_tha10_p2 | Desalination: East Thanet coast & transfer to Fleete Manston1 WSR (10MI/d) Phase 2 | This option would see a desalination plant constructed near to the North Thanet Coast, and would supply potable desalinated water to the Kent Thanet WRZ. Phase 2 | 10.00 | 2046 |
| Kent Thanet (KTZ) | SWS_KTZ_HI-DES_ALL_ALL_tha20 | Desalination: East Thanet coast & transfer to Fleete Manston1 WSR (20MI/d) | This option would see a desalination plant constructed near to the North Thanet Coast, and would supply potable desalinated water to the Kent Thanet WRZ. | 20.00 | 2041 |
| Kent Thanet (KTZ) | SWS_KTZ_HI-DES_ALL_ALL_tha20_p2 | Desalination: East Thanet coast & transfer | This option would see a desalination plant constructed near to the North Thanet Coast, and would supply potable desalinated water to the Kent Thanet WRZ. Phase 2 | 20.00 | 2046 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|---------------------|---|---|---|--------------|------------------------|
| | | to Fleete Manston1 WSR (20MI/d) Phase 2 | | | |
| Kent Thanet (KTZ) | SWS_KTZ_RE- OTH_ALL_ALL_neub-kt | Drought option: NEUBs - KTZ | Non-essential use ban - KTZ WRZ | 0.64 | 2026 |
| Kent Thanet (KTZ) | SWS_KTZ_RE- OTH_REP_ALL_bs_kmt _resil | Drought option: Reduce transfer to other commercial customers - KTZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.10 | 2028 |
| Kent Thanet (KTZ) | SWS_KTZ_RE- OTH_ALL_ALL_tub-kt | Drought option: TUBs - KTZ | Temporary use bans - KTZ WRZ | 1.92 | 2026 |
| Kent Thanet (KTZ) | SWS_KTZ_HI- TFR_RZ8_ALL_win | Import: SEW Kingston to KTZ Near Canterbury (2MI/d) | 2MI/d import from SEW Kingston to SWS Near Canterbury WSW | 2.00 | 2026 |
| Kent Thanet (KTZ) | SWS_KTZ_HI- TFR_KME_ALL_sfl | Transfer: Faversham4 WSR to Fleete Manston1 WSR (KTZ- KME) (14MI/d) | Faversham4 WSR to Fleete Manston1 WSR | 14.00 | 2026 |
| Kent Thanet (KTZ) | SWS_KTZ_HI- TFR_KME_ALL_sel3 | Transfer: Utilise full existing Faversham4- Fleete (KME-KTZ) transfer capacity (9MI/d) | The operational transfer is limited to the output from Faversham4. This option enables flows from the Faversham3 source to be directed, via an existing main, towards Faversham4 WSW. A soakaway is installed at Faversham4 to allow for reconditioning of the existing main and the addition of UV treatment at Faversham4 permits disinfection of the Faversham3 flows. | 9.00 | 2040 |
| Kent Thanet (KTZ) | Canterbury (Broad Oak) to Near Canterbury: 20MI/d | Canterbury (Broad Oak) to Near Canterbury: 20MI/d | A bidirectional pipe from Broad Oak to Near Canterbury. | 20.00 | 2050 |
| Kent Thanet (KTZ) | SWS_KTZ_HI- TFR_AZ7_ALL_win | Import: SEW Kingston to KTZ Near Canterbury (2MI/d) | 2MI/d import from SEW Kingston to SWS Near Canterbury WSW | 2.00 | 2026 |
| Isle of Wight (IOW) | SWS_IOW_RE- DRO_ALL_ALL_env_lv_ cal_westi | Drought option: Caul Bourne reduce MRF (1.5MI/d) | Caul Bourne reduce MRF | 1.50 | 2028 |
| Isle of Wight (IOW) | SWS_IOW_HI- ROC_ALL_ALL_env_lv_ yar_westi | Drought option: Modification of operational rules for the Eastern Yar scheme | Modification of operational rules for the Eastern Yar scheme. | 0.00 | 2028 |
| Isle of Wight (IOW) | SWS_IOW_RE- OTH_ALL_ALL_neub-iw | Drought option: NEUBs - IOW | Non-essential use ban - IOW WRZ | 1.28 | 2026 |
| Isle of Wight (IOW) | SWS_IOW_RE- OTH_REP_ALL_bs_kmt _resil | Drought option: Reduce transfer to other | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.07 | 2028 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|---------------------|--|---|--|--------------|------------------------|
| | | commercial customers - IOW | | | |
| Isle of Wight (IOW) | SWS_IOW_RE-DRP_ALL_ALL_env_iv_bow_westi | Drought option: Relaxation of Lukely Brook MRF from Lower Chalk in Lukely Brook Valley | Relaxation of Lukely Brook MRF from Lower Chalk in Lukely Brook Valley | 3.00 | 2028 |
| Isle of Wight (IOW) | SWS_IOW_RE-OTH_ALL_ALL_tub-iw | Drought option: TUBs - IOW | Temporary use bans - IOW WRZ | 2.14 | 2026 |
| Isle of Wight (IOW) | SWS_IOW_HI-GRW_ALL_ALL_nw_gw_a_kni_westi | Groundwater: Newchurch LGS (1.9MI/d) | This option proposes replacing all 3 Lower Greensand boreholes on site so that the source can operate to its licenced capacity. Currently BH4 is non-operational. BH1 and BH2 are operational but at reduced capacity due to screen-dewatering. No additional treatment is proposed. Scheme output: 4.5MI/d | 4.50 | 2035 |
| Isle of Wight (IOW) | SWS_IOW_HI-GRW_ALL_ALL_br_less | Groundwater: Eastern Yar3 replacement BH (1.5MI/d) | The option is to drill a new replacement borehole, 100m deep, for Eastern Yar3 Augmentation well on the Isle of Wight. The existing Eastern Yar3 borehole has c. 90%+ loss in performance, and previous well rehabilitation and cleaning has not provided a notable improvement. A replacement well is required to regain resilience within the augmentation well field. | 1.50 | 2040 |
| Isle of Wight (IOW) | SWS_IOW_HI-REU_RE1_ALL_sey9 | Recycling: Sandown WwTW (8.1MI/d) | This option proposes the transfer of treated effluent from Sandown WwTW (currently discharged to sea), to support flows in the Eastern River Yar upstream of the Sandown WSW. Treated water in excess of the local demand will be transferred through a new transfer pipeline to the Alvington High Level WSR, near Newport, for supply to much of the island. This option is reliant on the WSR enlargements carried out in IZT_CSM Cross-Solent upgrade. (2) Option 2 also includes upgrades to Sandown WSW to achieve the extra flow. | 8.05 | 2028 |
| Hants Andover (HAZ) | SWS_HAZ_RE-OTH_ALL_ALL_neub-ha | Drought option: NEUBs - HAZ | Non-essential use ban - HAZ WRZ | 0.36 | 2026 |
| Hants Andover (HAZ) | SWS_HAZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - HAZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.03 | 2028 |
| Hants Andover (HAZ) | SWS_HAZ_RE-OTH_ALL_ALL_tub-ha | Drought option: TUBs - HAZ | Temporary use bans - HAZ WRZ | 0.35 | 2026 |
| Hants Andover (HAZ) | SWS_HAZ_HI-TFR_HWZ_ALL_oan2 | Transfer: Otterbourne to Andover to Near Basingstoke - Crabwood to Micheldever (30MI/d) | Transfer from Otterbourne to Andover to Near Basingstoke. This scheme is designed to support network improvements needed for UTMRD transfer to Hampshire and/or the strategic scheme from IoW/South Hampshire | 30.00 | 2028 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------------|---|---|--|--------------|------------------------|
| Hants Near Basingstoke (HKZ) | SWS_HKZ_RE-OTH_ALL_ALL_neub-hk | Drought option: NEUBs - HKZ | Non-essential use ban - HKZ WRZ | 0.20 | 2026 |
| Hants Near Basingstoke (HKZ) | SWS_HKZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - HKZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.00 | 2028 |
| Hants Near Basingstoke (HKZ) | SWS_HKZ_RE-OTH_ALL_ALL_tub-hk | Drought option: TUBs - HKZ | Temporary use bans - HKZ WRZ | 0.34 | 2026 |
| Hants Near Basingstoke (HKZ) | SWS_HKZ_HI-ROC_ALL_ALL_ewo | Groundwater: Newbury WSW (1.3MI/d) | The scheme is located within the Hampshire Near Basingstoke resource group (which consists of and is served by Near Basingstoke and Newbury WSWs). The scheme will increase the yield of the Newbury source within the existing licence by removing the present constraint imposed by mains leaving the site. This option will involve the construction of a dedicated, 7.1 km 300mm DN300 pipe from Newbury water supply works (WSW) and additional pumps and treatment facilities to increase the supply to Beacon Hill WSR. Additional high-lift pumping capacity would be required at Newbury. Newbury WSW abstracts water from the underlying chalk aquifer. It is considered that the River Enbourne will not be affected by the increased abstractions due to its perched nature above London Clay. | 1.30 | 2028 |
| Hants Near Basingstoke (HKZ) | SWS_HKZ_HI-TFR_HAZ_ALL_oan3 | Transfer: Otterbourne to Andover to Near Basingstoke - Micheldever to Near Basingstoke (10MI/d) | Transfer from Otterbourne to Andover to Near Basingstoke. This scheme is designed to support network improvements needed for UTMRD transfer to Hampshire and/or the strategic scheme from IoW/South Hampshire | 10.00 | 2040 |
| Hants Rural (HRZ) | SWS_HRZ_RE-OTH_ALL_ALL_neub-hr | Drought option: NEUBs - HRZ | Non-essential use ban - HRZ WRZ | 0.27 | 2026 |
| Hants Rural (HRZ) | SWS_HRZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - HRZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.00 | 2028 |
| Hants Rural (HRZ) | SWS_HRZ_RE-OTH_ALL_ALL_tub-hr | Drought option: TUBs - HRZ | Temporary use ban - HRZ WRZ | 0.44 | 2026 |
| Hants Rural (HRZ) | SWS_HRZ_HI-GRW_ALL_ALL_nw_gwa_tim_westi | Groundwater: - new BHs (4.8MI/d) | The existing boreholes and well/adits that supply Romsey WSW are either out of service or operating below their full capacity due to quality issues. This option proposes 3 replacement boreholes to increase DO on site. Scheme output is 13.7MI/d. No additional treatment is required. Replacement borehole locations are distant from existing borehole locations and require new pipelines to connect to WSW. | 4.80 | 2032 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------------|--|---|---|--------------|------------------------|
| Hants Rural (HRZ) | SWS_HRZ_HI-TFR_HSW_ALL_bro | Transfer: Romsey Town & Broadlands valve (HSW to HRZ) | Modelling suggests a new WBS in Palmerstone Street with a flow-rate of 5MI/d is viable. | 5.00 | 2026 |
| Hants Rural (HRZ) | SWS_HRZ_HI-IMP_HSW_ALL_rob1 | Transfer: Romsey Town & Broadlands valve (HSW-HRZ) (3.1MI//d) | Romsey Town & Broadlands valve (HSW-HRZ) | 3.10 | 2026 |
| Hants Winchester (HWZ) | SWS_HWZ_RE-OTH_ALL_ALL_neub-hw | Drought option: NEUBs - HWZ | Non-essential use ban - HWZ WRZ | 0.69 | 2026 |
| Hants Winchester (HWZ) | SWS_HWZ_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - HWZ | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.05 | 2028 |
| Hants Winchester (HWZ) | SWS_HWZ_RE-OTH_ALL_ALL_tub-hw | Drought option: TUBs - HWZ | Temporary use bans - HWZ WRZ | 1.16 | 2026 |
| Hants Winchester (HWZ) | SWS_HWZ_HI-TFR_HSE_CNO_oan1 | Transfer: Otterbourne to Andover to Near Basingstoke - Otterbourne to Crabwood (HWZ) (30MI/d) | Transfer from Otterbourne to Andover to Near Basingstoke. This scheme is designed to support network improvements needed for UTMRD transfer to Hampshire and/or the strategic scheme from IoW/South Hampshire. | 30.00 | 2028 |
| Hants Southampton West (HSW) | SWS_HSW_RE-OTH_ALL_ALL_neub-hsw | Drought option: NEUBs - HSW | Non-essential use ban - HSW WRZ | 1.22 | 2026 |
| Hants Southampton West (HSW) | SWS_HSW_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - HSW | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.07 | 2028 |
| Hants Southampton West (HSW) | SWS_HSW_RE-DRO_ALL_ALL_si_tesd_o2 | Drought option: Test Surface Water Drought Order (from 2027 onwards) (80MI/d) | Test Surface Water Drought Orderit (from 2027 onwards) | 80.00 | 2026 |
| Hants Southampton West (HSW) | SWS_HSW_RE-OTH_ALL_ALL_tub-hsw | Drought option: TUBs - HSW | Temporary use bans - HSW WRZ | 2.03 | 2026 |
| Hants Southampton West (HSW) | SWS_HSW_HI-GRW_RE1_ALL_str_asr_tes_westi | Groundwater: Test Surface Water MAR (5.5MI/d) | Managed Aquifer Recharge (MAR). Recharge of the confined chalk aquifer from mains water in winter months, with subsequent onsite abstraction from the same aquifer in summer/autumn critical low flow periods. Treatment is available on site and it is assumed that there is sufficient treatment capacity for the | 5.50 | 2041 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------------|-------------------------------------|---|---|--------------|------------------------|
| | | | abstracted water. The scheme assumes an extended pilot trial period, with subsequent development of the MAR scheme. | | |
| Hants Southampton West (HSW) | SWS_HSW_HI-ROC_WT1_ALL_cpy_ts_t_60 | Treatment capacity: Upgrade Test Surface Water WSW (60MI/d) | 60MI/d treatment train of surface water, possible augmented with Recycled Water. This would be a separate process stream from the existing raw water feed through to delivery to the network. | 60.00 | 2031 |
| Kent Medway West (KMW) | SWS_KMW_HI-DES_ALL_ALL_swa10 | Desalination: River Thames estuary (10MI/d) | This option proposes the development of a desalination plant adjacent to Britannia Refined Metal on the Swanscombe Peninsula, which would be capable of producing 10MI/d, and would combine discharge with Swanscombe WwTW's existing outfall. Treated water would be transferred to Singlewell WSR for distribution to the Kent Medway WRZ. | 10.00 | 2042 |
| Kent Medway West (KMW) | SWS_KMW_HI-DES_ALL_ALL_swa10_p2 | Desalination: River Thames estuary (10MI/d) Phase 2 | This option proposes the development of a desalination plant adjacent to Britannia Refined Metal on the Swanscombe Peninsula, which would be capable of producing 10MI/d, and would combine discharge with Swanscombe WwTW's existing outfall. Treated water would be transferred to Singlewell WSR for distribution to the Kent Medway WRZ. | 10.00 | 2057 |
| Kent Medway West (KMW) | SWS_KMW_HI-DES_ALL_ALL_swa20 | Desalination: River Thames estuary (20MI/d) | This option proposes the development of a desalination plant adjacent to Britannia Refined Metal on the Swanscombe Peninsula, which would be capable of producing 10MI/d, and would combine discharge with Swanscombe WwTW's existing outfall. Treated water would be transferred to Singlewell WSR for distribution to the Kent Medway WRZ. | 20.00 | 2040 |
| Kent Medway West (KMW) | SWS_KMW_HI-DES_ALL_ALL_swa20_p2 | Desalination: River Thames estuary (20MI/d) Phase 2 | This option proposes the development of a desalination plant adjacent to Britannia Refined Metal on the Swanscombe Peninsula, which would be capable of producing 10MI/d, and would combine discharge with Swanscombe WwTW's existing outfall. Treated water would be transferred to Singlewell WSR for distribution to the Kent Medway WRZ. | 20.00 | 2041 |
| Kent Medway West (KMW) | SWS_KMW_RE-OTH_ALL_ALL_neub-kmw | Drought option: NEUBs - KMW | Non-essential use ban - KMW WRZ | 0.63 | 2026 |
| Kent Medway West (KMW) | SWS_KMW_RE-OTH_REP_ALL_bs_kmt_resil | Drought option: Reduce transfer to other commercial customers - KMW | Drought option: In the event of a drought the Company would hold discussions with a commercial customer with regards to the resources position and their supply. | 0.09 | 2028 |
| Kent Medway West (KMW) | SWS_KMW_RE-OTH_ALL_ALL_tub-kmw | Drought option: TUBs - KMW | Temporary use bans - KMW WRZ | 1.88 | 2026 |
| Kent Medway West (KMW) | SWS_KMW_RE-DRO_ALL_ALL_si_bew_2 | Drought option: Bewl Water/River Medway Scheme (stages 1 to 4) Drought Permit/Order (2025 onwards) (17MI/d) | Bewl Water is a pumped storage reservoir with abstractions from the River Teise at Smallbridge and the River Medway at Maidstone. The Permit may take the form of authorisations to allow increased re-filling and conservation of existing storage of Bewl. The precise conditions applied for will depend upon the severity and timing of each drought. | 17.00 | 2026 |

| WRZ | Option ID | Option Name | Description | Yield (MI/d) | Year of Implementation |
|------------------------|------------------------------|--|---|--------------|------------------------|
| Kent Medway West (KMW) | SWS_KMW_HI-REU_RE1_ALL_ecc18 | Recycling: Aylesford WwTW - Eccles Lake (12.8MI/d) | This option involves the transfer of 18MI/d of treated effluent from Aylesford WWTW to Near Rochester WSW's raw water storage reservoir Eccles Lake. | 12.80 | 2031 |
| Kent Medway West (KMW) | SWS_KMW_HI-RSR_RE1_ALL_rab1 | Storage: Raising Bewl by 0.4m (3MI/d) | The scheme involves the raising of Bewl Water, by 0.4m to increase storage and yield. The major works for raising Bewl to higher TWL levels will include: • Raise the dam crest and build new wave wall; • Raise overflow and valve chamber shafts; and • Many ancillary works around the perimeter of the reservoir. | 3.00 | 2042 |

Appendix F Assessment Definitions of Significance

| SEA Objective | Datasets/Key Themes | Effect | Description |
|--|---|--------|---|
| Biodiversity, Flora, Fauna: Protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity (no loss and improve connectivity where possible) | 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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. |
| | | - | Minor Negative <ul style="list-style-type: none"> 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. The option would result in a minor decrease in the population of a priority species. 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. |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|--|--|--------|--|
| | | | <ul style="list-style-type: none"> The option would result in a minor increase or spread of INNS. |
| | | -- | <p>Moderate Negative</p> <ul style="list-style-type: none"> 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. The option would result in a moderate decrease in the population of a priority species. 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. The options would result in a moderate increase or spread of INNS. |
| | | --- | <p>Major Negative</p> <ul style="list-style-type: none"> 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. The option would result in a major decrease in the population of a priority species. 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. The option would result in a major increase or spread of INNS. |
| | | ? | <p>Uncertain</p> <ul style="list-style-type: none"> From the level of information available the effect that the option would have on this objective is uncertain |
| Soil: Protect and enhance the functionality, quantity and quality of soils | Agricultural Land Classification Landfill sites – authorised and historic | +++ | <p>Major Positive</p> <ul style="list-style-type: none"> The option would result in a major enhancement on the quality of soils through the implementation of catchment approaches, remediation or other measures. |
| | | ++ | <p>Moderate Positive</p> <ul style="list-style-type: none"> The option would result in a moderate enhancement on the quality of soils through the implementation of catchment approaches, remediation or other measures. |
| | | + | <p>Minor Positive</p> <ul style="list-style-type: none"> 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 | <p>Neutral</p> <ul style="list-style-type: none"> The option would not result in any effects on soils or land use. |
| | | - | <p>Minor Negative</p> <ul style="list-style-type: none"> 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. |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|---|--|--------|--|
| | | -- | Moderate Negative <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> From the level of information available the effect that the option would have on this objective is uncertain |
| Water: Increase resilience and reduce flood risk Protect and enhance the quality of the water environment and water resources Deliver reliable and resilient water supplies | Environment Agency Flood Defences Environment Agency Main Rivers 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 | +++ | Major Positive <ul style="list-style-type: none"> 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. |
| | | ++ | Moderate Positive <ul style="list-style-type: none"> The option achieves savings through demand management and does not require abstraction to achieve yield. The option contributes to addressing failure of WFD Good Ecological Status / Good Ecological Potential. The option would result in a moderate improvement to flood risk. The option would result in a moderate improvements in water efficiency, reduces demand and improves resilience. |
| | | + | Minor Positive <ul style="list-style-type: none"> The option achieves savings through demand management and does not require abstraction to achieve yield. The option would result in a minor improvement to flood risk. The option would result in a minor improvements in water efficiency, reduces demand and improves resilience. |
| | | 0 | Neutral <ul style="list-style-type: none"> 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. |
| | | - | Minor Negative <ul style="list-style-type: none"> 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. The option would result in minor decreases in groundwater quality or levels. The option is located in Flood Zone 2. The option would result in minor decreases in water efficiency, increases demand and reduces resilience. |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|--|--|--------|--|
| | | -- | Moderate Negative <ul style="list-style-type: none"> 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. The option results in the likely deterioration of WFD classification. The option would result in moderate decreases in groundwater quality or levels. The option is located in Flood Zone 3. The option would result in moderate decreases in water efficiency, increases demand and reduces resilience. |
| | | --- | Major Negative <ul style="list-style-type: none"> 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. The option results in the deterioration of WFD classification. The option would result in major decreases in groundwater quality or levels. The option is located in Flood Zone 2 or 3 and further contributes to flood risk. The option would result in major decreases in water efficiency, increases demand and reduces resilience. |
| | | ? | Uncertain <ul style="list-style-type: none"> From the level of information available the effect that the option would have on this objective is uncertain. |
| Air: Reduce and minimise air emissions | Air Quality Management Zones Air quality monitoring sites | +++ | Major Positive <ul style="list-style-type: none"> The option would result in a major enhancement of the air quality within one or more AQMAs. |
| | | ++ | Moderate Positive <ul style="list-style-type: none"> The option would result in a moderate enhancement of the air quality within one or more AQMAs. |
| | | + | Minor Positive <ul style="list-style-type: none"> The option would result in an enhancement of the air quality. |
| | | 0 | Neutral <ul style="list-style-type: none"> The option would not result in any effects on Air Quality and AQMAs. |
| | | - | Minor Negative <ul style="list-style-type: none"> The option would result in a decrease of the air quality. |
| | | -- | Moderate Negative <ul style="list-style-type: none"> The option would result in a decrease of the air quality within one or more AQMAs. |
| | | --- | Major Negative <ul style="list-style-type: none"> The option would result in a major decrease in the air quality within one or more AQMAs. |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|---|---|--------|--|
| | | ? | Uncertain <ul style="list-style-type: none"> From the level of information available the effect that the option would have on this objective is uncertain. |
| Climate Factors: 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 <ul style="list-style-type: none"> The option will generate significant additional zero carbon energy that can be fed back into the grid/reduce carbon emissions (see carbon scale) The option will result in a major increase in carbon sequestration. The option will increase resilience/decrease vulnerability to climate change effects. |
| | | ++ | Moderate Positive <ul style="list-style-type: none"> The option will increase resilience/decrease vulnerability to climate change effects. The option will result in a moderate increase in carbon sequestration. The option will generate moderate additional zero carbon energy that can be fed back into the grid/reduce carbon emissions (see carbon scale) |
| | | + | Minor Positive <ul style="list-style-type: none"> The option will increase resilience/decrease vulnerability to climate change effects. The option will result in a minor increase in carbon sequestration. The option will generate minor additional zero carbon energy that can be fed back into the grid/reduce carbon emissions (see carbon scale) |
| | | 0 | Neutral <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> The option will have a minor impact on resilience/decrease vulnerability to climate change effects. The option will generate minor construction and/or operational carbon emissions (see carbon scale). |
| | | -- | Moderate Negative <ul style="list-style-type: none"> The option will have a moderate impact on resilience/significantly decrease vulnerability to climate change effects. The option will generate moderate construction and/or operational carbon emissions (see carbon scale). The option will result in a moderate release of previously sequestered carbon. |
| | | --- | Major Negative <ul style="list-style-type: none"> The option will have a major impact on resilience/significantly decrease vulnerability to climate change effects. The option will generate significant construction and/or operational carbon emissions (see carbon scale). The option will result in a major release of previously sequestered carbon. |
| | | ? | Uncertain <ul style="list-style-type: none"> From the level of information available the effect that the option would have on this objective is uncertain. |
| Landscape: | Areas of Outstanding Natural Beauty, National Character | +++ | Major Positive <ul style="list-style-type: none"> The option would have a major positive contribution to designated landscape (AONB or National Park) management plan objectives |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|--|---|--------|---|
| Conserve, protect and enhance landscape, townscape and seascape character and visual amenity | Areas, Green Belt, National Parks | | <ul style="list-style-type: none"> The option results in new, above ground infrastructure that significantly enhances the local landscape, townscape or seascape. |
| | | ++ | Moderate Positive <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> The option results in new, above ground infrastructure that has a minor positive effect on the local landscape, townscape or seascape. |
| | | 0 | Neutral <ul style="list-style-type: none"> The option would not result in any effects on the local landscape, townscape or seascape. |
| | | - | Minor Negative <ul style="list-style-type: none"> The option results in new, above ground infrastructure that has a minor negative effect on the local landscape, townscape or seascape. |
| | | -- | Moderate Negative <ul style="list-style-type: none"> 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. |
| | | --- | Major Negative <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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 - Grade II listed structures Registered Parks and Gardens: - Grade I Registered Parks and Gardens - Grade II* Registered Parks and Gardens - Grade II Registered Parks and | +++ | Major Positive <ul style="list-style-type: none"> 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. |
| | | ++ | Moderate Positive <ul style="list-style-type: none"> The option will result in enhancements to designated heritage assets and/or their setting. Improving interpretation and public access to important heritage assets. |
| | | + | Minor Positive <ul style="list-style-type: none"> The option will result in enhancements to non-designated heritage assets and/or their setting. |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|--|--|--------|---|
| | Gardens | 0 | Neutral <ul style="list-style-type: none"> The option will have no effect on cultural heritage assets or archaeology. |
| | Protected Wrecks Registered Battlefields Scheduled Monuments Conservation Areas World Heritage Sites | - | Minor Negative <ul style="list-style-type: none"> 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. |
| | | -- | Moderate Negative <ul style="list-style-type: none"> 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. |
| | | --- | Major Negative <ul style="list-style-type: none"> The option will diminish the significance of designated heritage assets and/or their setting such as: <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. |
| | | ? | Uncertain <ul style="list-style-type: none"> From the level of information available the effect that the option would have on this objective is uncertain. |
| Population, Human Health Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing Maintain and | Noise action important area Indices of Multiple Deprivation 2015 | +++ | Major Positive <ul style="list-style-type: none"> 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. The option creates new, and significantly enhances existing, recreational facilities, publicly accessible greenspace and/or tourism within the operational area. |
| | Functional site: - Schools - Medical facilities | ++ | Moderate Positive <ul style="list-style-type: none"> 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. The option enhances existing, recreational facilities, publicly accessible greenspace and/or tourism within the operational area |
| | OS Greenspace dataset: - Allotments - Bowling green - Cemetery - Golf course | + | Minor Positive <ul style="list-style-type: none"> 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. |
| | - Sports facility | 0 | Neutral <ul style="list-style-type: none"> The option would not result in any effects on human health and existing recreational facilities and/or tourism. |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|---|--|--------|---|
| enhance tourism and recreation | <ul style="list-style-type: none"> - Play space - Playing field - Public park or garden - Religious grounds - Tennis courts | - | <ul style="list-style-type: none"> Minor Negative • 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. |
| | | -- | <ul style="list-style-type: none"> Moderate Negative • The option results in the permanent removal of existing recreational facilities, publicly accessible greenspace and/or tourism within the operational area. |
| | | --- | <ul style="list-style-type: none"> Major Negative • 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. |
| | | ? | <ul style="list-style-type: none"> Uncertain • From the level of information available the effect that the option would have on this objective is uncertain. |
| Material Assets Minimise resource use and waste production Avoid negative effects on built assets and infrastructure | Transport: <ul style="list-style-type: none"> - Major roads – A roads - Major roads motorway - Railway line - National cycle route - National trails | +++ | <ul style="list-style-type: none"> Major Positive • 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. |
| | | ++ | <ul style="list-style-type: none"> Moderate Positive • 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. |
| | | + | <ul style="list-style-type: none"> Minor Positive • 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. |
| | | 0 | <ul style="list-style-type: none"> Neutral • The option would not result in any effects on material assets. |
| | | - | <ul style="list-style-type: none"> Minor Negative • 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. • The option results in a minor increase in energy consumption with no renewable energy options. • The option results in a minor disruption on built assets and infrastructure, including transport. |
| | | | |

| SEA Objective | Datasets/Key Themes | Effect | Description |
|---------------|---------------------|--------|---|
| | | -- | Moderate Negative <ul style="list-style-type: none"> The option will require new infrastructure with only limited opportunities for the re-use or recycling of waste materials. The option results in a moderate increase in energy consumption with no renewable energy options. The option results in a moderate disruption on built assets and infrastructure, including transport links. |
| | | --- | Major Negative <ul style="list-style-type: none"> 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. The option results in a major increase in energy consumption with no renewable energy options. The option results in a major distribution on built assets and infrastructure, including transport links. |
| | | ? | Uncertain <ul style="list-style-type: none"> From the level of information available the effect that the option would have on this objective is uncertain. |

Appendix G Demand Management Options Assessments

Please see separate document.

Appendix H Preferred Options Assessments

Please see separate document.

Appendix I Constrained Options Assessments

Please see separate document.