



WRSE Draft Regional Plan Strategic Environmental Assessment Environmental Report – Non-Technical Summary



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Contents

1	Non-	Technical Summary	6
	1.1	Introduction	6
	1.2	Description of the WRSE Regional Plan	7
	1.3	Development of the WRSE Regional Plan	8
	1.4	The SEA Process	9
	1.5	Limitations of the Environmental Report	11
	1.6	SEA Scoping Summary	12
	1.7	Environmental Assessment Methodology	13
	1.8	Assessment of Draft Regional Plan	21
	1.9	Mitigation and Monitoring	33
	1.10	Consultation and Next Steps	35



Abbreviations

AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Areas
BAU	Business As Usual
BNG	Biodiversity Net Gain
DCLG	Department for Communities and Local Government
Defra	Department for Environment, Food and Rural Affairs
ENCA	Enabling a Natural Capital Approach
EU	European Union
GIS	Geographic Information System
GWDTE	Ground Water Dependent Terrestrial Ecosystems
HRA	Habitats Regulations Assessment
INNS	Invasive Non-Native Species
LNR	Local Nature Reserve
LULUCF	Land Use, Land-use Change, and Forestry
NEUBS	Non-Essential Use Bans
NNR	National Nature Reserve
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
SRO	Strategic Resource Option
SPA	Special Protection Area
ToLS	Test of Likely Significance
TUBS	Temporary Use Bans
UK	United Kingdom
WFD	Water Framework Directive
WRMP	Water Resource Management Plan



WRPG Water Resources Planning Guidance

WRSE Water Resources South East



1 Non-Technical Summary

1.1 Introduction

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

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

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

WRSE has prepared the Draft Regional Plan for publication and consultation in Autumn/Winter 2022/2023. Prior to this, the Emerging Regional Plan was published in January 2022 to provide an early insight into the big issues and emerging solutions to gain initial feedback from stakeholders and support the development of the Draft Regional Plan. It is a step in an ongoing process of plan development, and not yet a formal preferred plan. The key steps in the Regional Plan process are as follows:

- Emerging Regional Plan consultation January to March 2022
- Draft Regional Plan consultation Autumn/Winter 2022/2023
- Revisions following consultation Spring 2023
- Final Regional Plan Autumn 2023

To support the development of the Regional Plan an environmental assessment process has been undertaken that includes:

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

This report is a non-technical summary of the SEA Environmental Report and therefore, focusses primarily on the results of the SEA assessment. The additional environmental assessments outlined above are presented in the respective technical appendices of the Environmental Report, however highlevel summaries are also included within this non-technical summary. The environmental assessments



undertaken supported the development of the Emerging Regional Plan and Draft Regional Plan. This non-technical summary should be read alongside the WRSE Draft Regional Plan (November 2022).

The Regional Plan is not a statutory plan and there is currently no legal requirement for the preparation of the SEA. However, the Water Resources National Framework – Annex 2: Regional Planning, states that Regional Plans should comply with SEA legislation. WRSE have therefore, followed the SEA approach to align with this guidance, help develop a sustainable Regional Plan and inform the SEAs of the water company WRMPs. Based on the level and scale of the information available at this stage, the SEA is considered to be a robust assessment of the WRSE Regional Plan in order to support the WRMPs. Limitations of the Environmental Report are set out in Section 1.5. However, it should be noted that this Environmental Report focussed on the cumulative effects of the Plan and its alternatives. Specifically on potential cumulative effects where options from different water companies could affect the same environmental receptors. This approach avoids duplication of the individual water company WRMP SEA processes and helps capture potential effects between WRMPs (see Section 1.7 for further details on the approach). Details on individual option assessments and WRMP cumulative assessments can be found in the relevant water company WRMP24 Environmental Reports. Further and more detailed assessments, including (where appropriate) Environmental Impact Assessments will be undertaken of individual schemes as part of future applications for planning and other consents.

1.2 Description of the WRSE Regional Plan

WRSE aims is to secure resilient and sustainable water supplies for future generations through a collaborative, regional approach. The WRSE Regional Plan takes a long-term view to water resource planning across the region to 2100 in order to secure a sustainable and resilient water supply. The WRSE Regional Plan seeks to:

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

Further details and information on the WRSE Regional Plan are available on the WRSE website: <u>https://www.wrse.org.uk/</u> and within the WRSE Draft Regional Plan (November 2022).

Over 1,000 water resource and demand options were assessed as part of the SEA process. Supply options include transfers, desalination, water reuse, conjunctive use, aquifer storage and recovery, reservoirs, trading and nature-based solutions. Demand management options include leakage reduction, water metering, seasonal water rates, targeted restrictions, behavioural measures and water efficiency measures. These supply and demand management options have been provided to WRSE by the individual water companies as a constrained list of options. Catchment management schemes were also assessed which included options such as river restoration, wetland creation and enhancement, pesticide reduction, terrestrial habitat creation and management, natural flood management (NFM) and education.

Strategic Resource Options (SROs) that cover more than one water company have also been proposed, and any SRO that is wholly or partially within the WRSE region has been assessed as part of the SEA and wider environmental assessment process. In parallel with the Regional Plan development the SROs are going through the RAPID (Regulators' Alliance for Progressing Infrastructure Development) Gated



process. As part of this process detailed project level environmental assessments are being undertaken including project specific HRA Appropriate Assessments and WFD Assessments. This information has fed back into the Draft Regional Plan and WRMP development where available. Further information from the RAPID Gated process will be used to inform the Final Plan as it becomes available from the relevant water companies.

1.3 Development of the WRSE Regional Plan

The WRSE Draft Plan, Annex 1, Part 3 (November 2022) sets out how the Regional Plan has been developed. A brief summary is provided below.

WRSE has characterised the vast range of challenges in the Southeast using an adaptive situational tree. This situational tree is used by the investment model to derive a series of investment plans to meet the needs of the region taking uncertainty into account. The uncertainties are around forecasting future conditions for supply, demand and environmental policy. WRSE has used an adaptive planning approach to allow for the uncertainties in forecasting future conditions over the planning period 2025 to 2075. The investment model uses a set of resilience, environmental, and cost metrics to select an optimum set of solutions over the longer term with alternative situations to meet many different potential futures.

This adaptive planning approach is promoted by the National Framework and the Water Resources Planning Guidance (WRPG)¹.

In order to build an adaptive plan, it is necessary to characterise the range of forecast supply demand balances using a set of pathways or situations that are representative of the range of challenges. For the Regional Plan, nine potential pathways were defined to cover the key forecasts including an upper and lower forecasted deficit. For each situation, a specific growth forecast; a supply forecast; an environmental destination and a climate change impact forecast were defined. Further details on defining WRSE's situation tree are included in WRSE Draft Plan Annex 1, Section 12 including how climate change scenarios were generated and used to support future water resource planning in the investment model.

An investment model was used with information on options inputted and different scenarios run to select options based on programmed parameters. WRSE has adopted a best value approach for the Regional Plan. In the context of water resources planning, this means considering a range of factors (not exclusively financial cost), seeking solutions that not only secure supplies for customers, but also increases the overall benefit to customers, the wider environment and society as a whole. In addition, for sensitivity testing and to meet regulatory guidance, the investment model was run to select a least cost plan by only using the cost information to optimise the solution. Similarly, WRSE also developed a Best Environmental and Societal Plan by ensuring the investment model optimised on the environmental and customer preference metrics. The WRSE Draft Plan (Best Value Plan), and the Least Cost Plan and Best Environmental and Societal Plan as alternatives, were assessed as part of the SEA as presented. The programmes selected contain various types of supply and demand options, including transfers, new reservoirs, conjunctive use, desalination, drought options, catchment management schemes, amongst others. The methodology implemented to assess these programmes is summarised in Section 1.7 and the results are summaries in Section 1.8.

¹ Environment Agency, Natural Resources Wales, Office for Water Services. (2022). WRPG. Available at: <u>https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline</u>



The programmes selected in the Draft Regional Plan are from the same pathway, Situation 4. Situation 4 has been chosen as the core pathway as it includes the growth scenario and environmental destination scenario (business as usual (BAU)+ plus local commitments) that satisfies guidance.

1.4 The SEA Process

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

'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development².

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

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

² The SEA Directive does not define what is meant by Sustainable Development. However, the Government SEA Guidance "A Practical Guide to the SEA Directive" (September 2005) sets out what "promotion of sustainability development" means in the UK context. The guidance references the UK Sustainable Development Framework "Our Future – difference paths" (2005) which states "The goal of sustainable development is to enable all people throughout the world to satisfy their basic needs and enjoy a better quality of life, without comprising the quality of life for future generations. For the UK Government that goal will be pursued in an integrated way through a sustainable, innovative and productive economy that delivers high levels of employment; and a just society that promotes social inclusion, sustainable communities and personal well-being. This will be done in ways that protect and enhance the physical and natural environment, and use resource and energy as efficiently as possible." This definition is reflected in the document 'Mainstreaming sustainable development – The Government's vision and what this means in practice' (Defra, February 2011) which sets out the vision of "stimulating economic growth and tacking the deficit, maximising wellbeing and protecting our environment, without negatively impacting on the ability of future generations to do the same".



Figure 1.1: SEA Process Stages



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

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

- Environmental assessment guidance for water resources management plans and drought plans, 2021, UK Water Industry Research.
- A Practical Guide to the SEA Directive, 2005, Department for Communities and Local Government (DCLG).
- Topic related SEA guidance on climate change, biodiversity and the historic environment from Natural England, Environment Agency and Historic England.
- Water Resource Planning Guidelines, 2022, Environment Agency, Ofwat, Natural Resources Wales and Supplementary Planning Guidance 'Environmental and Society in Decision-Making'.

The SEA process has followed the principles and requirements of the SEA Directive and guidance as stated above.



1.5 Limitations of the Environmental Report

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

The WRSE Regional Plan covers a large geographical area. Therefore, the baseline summarised in this report is currently a high-level review of conditions within the region. A Geographic Information System (GIS) tool was developed to hold location specific baseline information. This tool was used during the options assessment to provide more detailed information to enable the assessment of effects of each option and the cumulative and in-combination effects of the Draft Regional Plan. A range of baseline datasets under each SEA objective have been used (as set out in Appendix G of the Environmental Report). However, given the regional nature of the plan, detailed local baseline data such as local (non-designated) wildlife sites, Local Plan housing allocations and minerals and waste allocations were not included. This information has been gathered (where possible) at the WRMP level and included as part of the WRMP24 SEAs.

The option assessments, cumulative and in-combination effects assessments have been based on the options information and GIS data provided by the water companies. It should be noted that options were at varying levels of development and therefore, the options information available to inform the assessments varied.

The cumulative effects assessments of the Draft Regional Plan have been assessed with local level impacts by each of the WRSE water companies individually as part of their WRMP process. WRSE is setting out to ensure there is regional coherence between these and that all impacts to environmental and social receptors (including Natura 2000 designated sites for HRA and waterbodies for WFD) that cross the company boundaries are picked up and the selected options are assessed together. The cumulative assessment presented within this Environmental Report has focussed on options interfaces between the boundaries of the Water Company regions to assess the impacts of different company options on environmental and social receptors. Further information on the methodology is summarised in Section 1.7.

The Regional Plan development is currently at the Draft Regional Plan stage and will be further developed into the Final Regional Plan following consultation and further investment model runs. The HRA Test of Likely Significance, WFD Level 1 and INNS risk screening were undertaken to inform the development of the Emerging Plan. Where required, further HRA Appropriate Assessment, WFD Level 2 and INNS assessments have been undertaken to feed into the development of the Draft Regional Plan. However, it should be noted that level 2 assessments were not undertaken for all of the options included within the Draft Plan. The SEA, HRA and WFD have therefore been based on the level 2 assessments where they were made available by the water companies. Where they were not made available, level 1 assessments have been used at this stage. This approach has been discussed and accepted by the Environment Agency and Natural England. The use of level 1 information has the potential to flag the plan as having higher environmental risks. Level 2 assessment information will feed into the assessment of the final plan.



1.6 SEA Scoping Summary

The Scoping Stage of the SEA process sets the context and scope of the SEA and Environmental Report. A summary of the scoping as presented in the SEA Scoping Report (Mott MacDonald, September 2020) is outlined in full in Appendix B of the Environmental Report with additional information included within Appendix C-E as follows:

- SEA Environmental Report Appendix B Scoping Summary
- SEA Environmental Report Appendix B Appendix C Scoping Report Consultation Log
- SEA Environmental Report Appendix B Appendix D Policy, Plans and Programmes Review
- SEA Environmental Report Appendix B Appendix E Baseline Review and Baseline Maps

The SEA Framework, as shown in Table 1.1, formed the basis for predicting and assessing the effects arising from the implementation of the WRSE Regional Plan. The Framework was used to assess the individual options and the alternative programmes for the Regional Plan. These are linked to the SEA Directive topics, the key priorities for WRSE and have been informed by a review of the SEA objectives used for WRMP19 by the six water companies' within WRSE. The results of the HRA and WFD assessments fed into the SEA objectives on biodiversity and water.

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

SEA Topic	Proposed 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					

Table 1.1: SEA framework



SEA Topic	Proposed SEA Objective
Material Assets	Minimise resource use and waste production
	Avoid negative effects on built assets and infrastructure

1.7 Environmental Assessment Methodology

1.7.1 Overview

To determine the environmental effects of the options and Draft Regional Plan and its alternatives, the following staged assessment process was undertaken:

- Options-level assessment (including SEA, HRA, WFD, NCA, BNG, and INNS assessments)
- Programme Appraisal including cumulative and in-combination effects for SEA, HRA, WFD, NCA and BNG.

This chapter summarises the assessment methodology in relation to the SEA. The full Regional Plan environmental assessment method guidance document is available at:

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

Figure 1.2 presents a diagram of the overarching environmental assessment approach. It shows the key interactions between the environmental assessment and the options decision-making and plan development as part of an integrated and iterative process.





Figure 1.2: Environmental Method Integration with Options Decision-Making and Plan Development

Source: Mott MacDonald

1.7.2 Options Level Assessment

1.7.2.1 SEA Methodology

The options level SEA assessment was carried out using the SEA Framework outlined in Table 1.1. Each SEA objective has a set of defined datasets and a defined scoring system using a qualitative scale of minor, moderate, major positive and minor, moderate, major negative, and neutral as summarised in Table 1.2. The effects of each option were assessed using this scale and a narrative justification. The datasets and scoring definitions are presented in full in Appendix G of the Environmental Report.



Table 1.2: Scoring key

Effect	Description
+++	Major Positive
++	Moderate Positive
+	Minor Positive
0	Neutral
-	Minor Negative
	Moderate Negative
	Major Negative

The results of the HRA and WFD assessments fed into the SEA objectives on biodiversity and water. A high-level INNS risk screening exercise was undertaken based on options type to identify those options with potential for INNS risks. The results were reported as part of the SEA under the biodiversity objective. Further details on the HRA, WFD, INNS, BNG and NC assessments are presented in Section 1.7.5.

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 G. 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.

Potential mitigation and enhancement measures were also identified as part of the options assessment process and fed back to the options development team as part of an iterative process.

1.7.2.2 Environmental Metrics

The outcomes of the environmental assessments were translated into metrics to feed into the multicriteria optimisation for options selection and the programme appraisal (used in the investment model):

- SEA metrics:
 - SEA metric positive
 - SEA metric negative
- BNG metric BNG net unit change
- Natural capital metric £/yr

The SEA Environmental Report presents a description of each metric and details how they were developed and used within the investment model. See Section 4.2.2 of the Environmental Report for further information on the environmental metrics.

1.7.3 Programme Appraisal

As explained in Section 0, the Draft Regional Plan is an adaptive plan. WRSE has characterised the vast range of challenges in the South East using an adaptive situational tree. Situation 4 is the reference scenario that has been used for the environmental assessments due to it meeting the guidance from the



regulators. The situation includes the housing plan growth forecast and moves from low environmental destination (including licence capping) and medium climate change scenarios to high environmental destination and high climate change scenarios.

The WRPG requires WRSE to base its growth forecast on plan-based growth assumptions, and so Situation 4 uses the Housing Plan scenario as the growth forecast.

The WRPG identifies that the BAU+ scenario is the minimum to be considered by companies in their WRMPs and the WRSE high environmental ambition scenario best aligns with the BAU+ environmental ambition, whilst also incorporating licence capping. WRSE aligned the environmental destinations with the climate change impacts, which is why the high climate change is used in Situation 4 as it will contribute to higher environmental destination reductions to maintain the flows in the river.

The programme appraisal is a cumulative assessment of the chosen programmes of options selected by the WRSE investment model and includes the following three plans:

- WRSE Draft Plan (Best Value Plan) Investment model pareto runs for Best Value Plan metrics (Customer Preference, SEA+, SEA-, Natural Capital, Carbon, Resilience (reliability, adaptability, evolvability), intergenerational equity), this is optimised on both individual Best Value Plan and cost metrics
- Least Cost Plan Investment model run result when optimising on cost only
- Best Environmental and Societal Plan Removes the resilience metrics from the Best Value Plan

The options within these plans include supply, demand, drought, catchment and multi-sector options. The ESRI ArcGIS tool developed for the options assessment was used to help identify potential cumulative or in-combination effects from options on environmental and community features/assets. The aim of the assessment was to ensure that the selected options in a branch will not result in significant negative effects cumulatively or in-combination with each other and that opportunities to maximise positive effects across the plan as a whole are identified.

The cumulative effects assessments of the Draft Regional Plan have been assessed with local level impacts by each of the WRSE water companies individually as part of their WRMP process. The challenge to WRSE is to ensure there is regional coherence between these and that all impacts to environmental and social receptors that cross the company boundaries are picked up and the selected options are assessed together. The SEA, HRA and WFD cumulative and in-combination effects assessments have been undertaken at the interfaces between the boundaries of the water company regions to assess the effects of different company options on environmental and social receptors (including Natura 2000 designated sites for HRA and waterbodies for WFD). The interfaces consider effects from selected options within 500m of the company boundaries. This ensures the company plans are working together for the environment across the region.

By focussing on the potential for effects at the interfaces between water companies, the cumulative and in-combination assessments therefore provide an additional step beyond the assessments undertaken by the water companies in the WRMP24s to provide a regional overview. The cumulative and in-combination assessments undertaken as part of the individual water companies' WRMP24 Environmental Reports can be reviewed to provide insight into those local level impacts.

The methodology also considers environmental receptors, such as a designated sites, which fall within the 500m buffer region. Any options impacting these designated sites (even if the option is over 500m from the company boundary) will also be brought into the regional assessment. This enables pathways and not just distance to be part of the cumulative effects assessment process.



The approach has involved two separate assessments which has comprised of options selected by 2050 and separately those selected post 2050 (and up until 2075). The Regional Plan is not a statutory requirement but as it feeds into the WRMPs, WRSE wants to ensure it is compliant with the requirements. The assessments have been undertaken on the 25-year statutory plan up to 2050. After this the plan becomes the regional strategy with uncertainty related to planning scenarios and technical improvements for options.

Further information on the methodology is presented in the Regional Approach to In-combination and Cumulative Effects Assessment of the WRSE Draft Plan³.

Due to the nature of SEA, an SEA metric for each Plan was not generated. Instead, the standard SEA process was followed whereby the qualitative effects (using the major to minor effect scale) was identified for each of the three plans. The SEA objectives and assessment criteria developed during the scope stage and used to assess the performance of the individual water resource options were used to undertake the SEA cumulative effects assessment. The results of the cumulative effects assessment are summarised in Section 1.8.

The scope of the cumulative effects assessment includes only cumulative effects between the options selected in a plan. In-combination effects with other Regional Plans will be undertaken once this information is available and in-combination effects with other plans, programme and projects such as Local Development Plans has been undertaken at the WRMP24 level.

1.7.4 Effects outside the WRSE Boundary

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

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

1.7.5 Other Environmental Assessments

1.7.5.1 Habitats Regulations Assessment (HRA)

HRA Test of Likely Significance (ToLS) was undertaken for the options that went into the investment model. Where possible, HRA Appropriate Assessment has been undertaken for the options selected within the Best Value Plan which were identified to have uncertain or likely significant effects. The HRA in-combination effects assessment has been undertaken using the HRA Appropriate Assessment results where available, however where these are not available, the ToLS results have been used to inform the assessment at this stage. The in-combination effects assessment only included the in-combination effects of the selected options within the Best Value Plan, the options selected within the Least Cost Plan and Best Environmental and Societal Plan were not considered. Wider in-combination effects with

³ WRSE (2022). Regional Approach to In-combination and Cumulative Effects Assessment of the WRSE Draft Plan.



other plans, programmes and projects were considered at the WRMP24 level. The results of the HRA ToLS and in-combination effects assessment is presented in Appendix H of the Environmental Report.

1.7.5.2 Water Framework Directive Assessment (WFD)

A WFD Level 1 assessment was undertaken for the options that went into the investment model. Where possible, WFD Level 2 assessments have been undertaken for the options selected within the Best Value Plan which were identified to require further assessment. The WFD in-combination effects assessment has been undertaken using the Level 2 results where available, however where these are not available, the Level 1 assessment have been used to inform the assessment at this stage. The in-combination effects assessment only included the in-combination effects of the selected options within the Best Value Plan, the options selected within the Least Cost Plan and Best Environmental and Societal Plan were not considered. Wider in-combination effects with other plans, programmes and projects were considered at the WRMP level. The results of the WFD Level 1 assessment and in-combination effects assessment are presented in Appendix I of the Environmental Report .

1.7.5.3 Natural Capital Assessment (NCA) and Biodiversity Net Gain Assessments (BNG)

NCAs and the BNG assessments were undertaken for the options that went into the investment model. An in-combination effects assessment was undertaken for options selected within the Best Value Plan. Wider in-combination effects with other plans, programmes and projects were considered at the WRMP level. Only options with land use change could be assessed as part of the NCA and BNG assessments. The NCA followed the ENCA guidance to assess effects on provision of ecosystem services and provide a monetary value. The BNG assessment used the Defra BNG 2.0 metric to determine the BNG units lost or gained from the option⁴. The results of the NCA and BNG assessments are presented in Appendix J of the Environmental Report.

1.7.5.4 Invasive Non-Native Species Risk Assessment (INNS)

A high-level INNS screening assessment was undertaken based on option type to identify the options which have the potential for INNS risks and the results were included within the SEA objective on biodiversity, flora and fauna. Further INNS assessments, where required, were undertaken by the individual water companies and reported as part of their WRMP24s. A cumulative INNS assessment has not been carried out by WRSE as it is not standard practice.

1.7.6 Influencing the Development of the WRSE Regional Plan

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

• The options-level SEA assessed the positive and negative effects of each option and identified possible mitigation and enhancement measures that were fed back to the option design teams. Options with major or moderate negative effects will need appropriate mitigation in order for them to be taken forward. Opportunities to maximise benefits were also be considered. Together with the results of the other environmental assessment a list of 'worse performing' options in terms of the environment was developed and these options were removed from the investment model.

⁴ Note: The DEFRA BNG 2.0 metric has been used as part of the assessments. Version 3.0 is now available; however version 4.0 is due to be released and it is intended that the assessments are updated to 4.0 once it is made available.



- The environmental metrics (translated from the assessment results) were included in the investment modelling to influence the selection of options within the Draft Regional Plan. They were used as part of the development of the Draft Regional Plan as one of the 'best value' criteria.
- The cumulative and in-combination effects of the selected options have been assessed for the Draft Regional Plan and will be assessed for the final plan. The options which have been assessed at this stage as part of the Draft Plan and have been flagged in this Environmental Report as having the potential for cumulative and in-combination effects, have been fed back to WRSE to identify solutions through methods such as scaling up nearby alternative options, confirming and costing larger mitigation packages to allow the scheme to be retained, amongst others. Appropriate plan wide mitigation and enhancement opportunities are being developed to support overall environmental net gain.

1.7.7 Relationship between the WRSE Regional Plan and WRMP24

The WRSE Regional Plan environmental assessments including the SEA have 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 part of the Regional Plan environmental assessments which were made available for use by the individual water companies. Figure 1.3 shows the interactions between the two processes and information shared from the Regional Plan environmental assessment to support the water company WRMP24 development process. The approach aimed to reduce the amount of work individual water companies needed to undertake during WRMP24, streamline the environmental assessments, and ensure consistency across water company environmental assessments.





Figure 1.3: 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)



1.8 Assessment of Draft Regional Plan

As outlined in Section 1.7.1, a two staged process was undertaken to determine the environmental effects of the options and Draft Regional Plan:

- Options-level assessment (including SEA, HRA, WFD, Natural Capital, BNG, and INNS assessments)
- Programme Appraisal including cumulative and in-combination effects for SEA, HRA, WFD, Natural Capital and BNG.

An option level SEA assessment was undertaken for each option included within the investment model. Over 1,000 options were assessed as part of this process and due to the volume of options, this Environmental Report does not present the assessment matrices for each individual option. The assessment sheets for individual options are available on request to WRSE.

A SEA cumulative effects assessment has been undertaken for the nominated programmes of options, selected before 2050 (Section 1.8.1) and post 2050 (Section 1.8.2), which have been identified from the WRSE investment model within Situation 4 (see Section 1.7 for the methodology).

The assessment has been undertaken in line with the methodology set out in Section 1.7 with further information presented in the Regional Approach to In-combination and Cumulative Effects Assessment of the WRSE Draft Plan⁵. The assessment is aligned with the same scoring method used on the individual options assessments as described in Section 1.7.2.

The assessment considered the options identified in the three plans (described in Section 1.7.3) that were selected by 2050 and are within 500m of the water company boundaries. If an environment receptor such as a designated site falls within the 500m buffer region, any options impacting these designated sites (even if the option is over 500m from the company boundary) were considered within the assessment. This enables pathways and not just distance to be part of the cumulative effects assessment process.

1.8.1 Draft Regional Plan (Pre-2050)

The list of options in each of the three Plans within the 500m buffers, selected pre-2050, are presented in Table 1.3. As explained in Section 1.7.3, the pre and post 2050 options have been assessed separately because up to 2050 is the 25-year statutory WRMP period and after this the plan becomes the regional strategy with uncertainty related to planning scenarios and technical improvements for options. Options without defined geographical locations such as temporary use bans (TUBS), non-essential use bans (NEUBS), catchment management options, media campaigns and demand management options are not included in Table 1.3 but have been considered within the cumulative effects assessment.

HRA and WFD in-combination assessments have also been undertaken on the Best Value Plan and the results have been used to inform the biodiversity and water objective in the SEA cumulative assessment. The results of the HRA and WFD in-combination assessments are presented in full in Appendix H and G respectively. BNG and NCA in-combination assessments were also undertaken with results presented in Appendix J.

⁵ WRSE (2022). Regional Approach to In-combination and Cumulative Effects Assessment of the WRSE Draft Plan.



Option Name	BVP	BESP	LCP
GUC option 3 50 MI/d phase 1 LB	✓	\checkmark	\checkmark
GUC option 3 50 MI/d phase 2 LB	\checkmark	\checkmark	~
Canals & Rivers Trust Slough	\checkmark	\checkmark	\checkmark
Brent Reservoir Transfer to Iver	\checkmark		
Egham to Iver 50MLD (Supply 2040)	\checkmark	\checkmark	\checkmark
Deal Supply Scheme	\checkmark	\checkmark	\checkmark
Aldington to Saltwood Import Increase by 6 MI/d	\checkmark	\checkmark	~
Barham Import Increase (of 4MI/d) to 6 MI/d	\checkmark	\checkmark	\checkmark
SRN Source D To Havant Thicket: 50MI/d	\checkmark	\checkmark	\checkmark
Bough Beech reservoir - raising	\checkmark	\checkmark	~
Transfer from Merton (TW) to SES Boundary at 15Ml/d	\checkmark	\checkmark	~
New Bulk Supply: SESW to SEW RZ1 Transfer - Bough Beech to Riverhill SR (10MI/d)	✓	\checkmark	\checkmark
Peacehaven Recycling at Arlington (30MI/d Option)	\checkmark		
New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth (10MI/d)	\checkmark	\checkmark	\checkmark
Newbury Groundwater	\checkmark	\checkmark	\checkmark
Import from Portsmouth Water (additional 9MI/d)	✓	\checkmark	~
Import from Portsmouth Water	✓	\checkmark	~
Transfer: Havant Thicket reservoir - Otterbourne WSW - first Section, raw (90MI/d)	✓	\checkmark	\checkmark
Desalination: Isle of Sheppey (20MI/d)	\checkmark	\checkmark	~
Recycling: Sittingbourne industrial reuse (7.5Mld)	\checkmark	\checkmark	\checkmark
Desalination: River Thames estuary (20MI/d) Phase 2	\checkmark	\checkmark	\checkmark
Desalination: River Thames estuary (20MI/d)	\checkmark	\checkmark	~
Canterbury (Broad Oak) to Near Canterbury: 20MI/d	✓	\checkmark	\checkmark
Import: SEW Kingston to KTZ Near Canterbury (2MI/d)	\checkmark	\checkmark	\checkmark
Import: Havant Thicket - Otterbourne direct raw water transfer - second section (90MI/d)	✓	\checkmark	✓
Conjunctive Benefit of Budds farm 60 M/d to Havant Thicket	✓		
Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60MI/d)	✓		
Worthing to Brighton: 40MI/d	✓	\checkmark	\checkmark
Recycling: Littlehampton WwTW (15MI/d)	✓	\checkmark	\checkmark
Storage: River Adur offline Reservoir	✓	\checkmark	\checkmark
Havant Thicket To Pulborough WTW: 50MI/d	\checkmark	\checkmark	\checkmark
Tilmore to Pulborough: 10MI/d	✓	\checkmark	\checkmark
Outwood To Turners Hill: 10MI/d	\checkmark	\checkmark	\checkmark
Culham to HWZ(200) Potable - Construction	\checkmark		
Transfer - SEW to Guildford - Conveyance Element	\checkmark	\checkmark	~
Groundwater Development - Southfleet & Greenhithe	✓	\checkmark	\checkmark
Resource from Cheam WTW to Merton PS (TW) at 30MI/d		\checkmark	\checkmark
New Bulk Supply: SESW Outwood to SEW Whitely Hill (5Ml/d)		\checkmark	

Table 1.3: Options within each Plan within the water company buffers (pre-2050)



Option Name	BVP	BESP	LCP
Peacehaven Recycling at Arlington (25Ml/d Option)		\checkmark	
Conjunctive Benefit of Budds farm 45 MI/d to Havant Thicket		\checkmark	\checkmark
Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (15MI/d)		\checkmark	\checkmark
Culham to HWZ (120) Potable - Construction		\checkmark	~
Henley to SWA Transfer – 5 MI/d		\checkmark	~
Peacehaven Recycling at Barcombe (25MI/d Option)			✓

1.8.1.1 Summary of Programme Appraisal (Pre 2050)

A summary of the SEA is presented in Table 1.4 which outlines the scoring identified for each of the SEA objectives for each of the three plans. This is considered to be an appropriate level of assessment at this draft regional plan stage and the need for further assessment of alternatives will be considered following draft plan consultation, and taking account of information from our member water companies and consultation on their draft WRMPs.

The cumulative assessment results identified across the Best Value Plan, Least Cost Plan and Best Environmental and Societal Plan are similar. This is likely due to the nature of the assessment in only considering options within water company boundary buffers which are similar across all three plans. Major and moderate positive residual effects are identified across numerous multiple SEA topics and objectives due to the inclusion of the catchment management and demand management schemes within the three plans. SEA objectives with positive residual effects include biodiversity, flora and fauna, soils; flood risk; water environment; climate resilience; landscape; and population and human health. The catchment management schemes include options such as river restoration, wetland creation and enhancement, and terrestrial habitat creation/management, natural flood management, education and engagement, which are likely to contribute to cumulative positive effects.

At the current stage of the assessment, major negative residual effects were identified for the construction and operational phase for the objective on biodiversity, flora and fauna for all three plans. The HRA in-combination assessment undertaken for the Best Value Plan identified that there are potential for in-combination construction and/or operational effects as a result of numerous options within the Best Value Plan. It should be noted that HRA ToLS (Stage 1) information was predominately used to inform the HRA in-combination assessment as HRA Appropriate Assessment (Stage 2) information was not made available by all the water companies at the time of assessment. It is recommended that the HRA in-combination offects assessment is re-visited once AA information is available to allow appropriate mitigation to be included in the assessment process. Although HRA in-combination assessments were not undertaken for the two alternative plans, major negative effects were identified as a worst-case scenario.

Moderate negative residual effects were identified for all three plans in relation to the SEA objective on the water environment. The WFD in-combination assessment undertaken on the Best Value Plan identified a potential risk of WFD deterioration as a result of the simultaneous operation of two drought permit options within the Best Value Plan. Moderate negative residual effects have therefore been carried through on the other two plans as a worst-case scenario as the two drought options are selected in all three plans. Mitigation would be secured through the Drought Plan and drought permit/order processes.

For all three plans, major negative residual effects have also been identified for the objective on carbon emissions for both construction and operation due to the cumulative impact of materials used to



construct the new infrastructure and construction activities (embodied carbon), and from operation. During operation, moderate negative residual effects have also been identified for climate resilience given the cumulative effect of options which involve groundwater or surface water abstraction, particularly during periods of drought, which will reduce the resilience of the natural environment to climate change. All three plans are also identified to have potential to result in moderate negative residual effects on landscape and the historic environment during the construction phase. The construction phase is also identified to have moderate negative residual effects on material assets due to the resource use and waste which will be cumulatively generated through the construction phase.

Further assessments of these potential affects will be undertaken ahead of the finalisation of the plan, taking account of information from our member water companies, including appropriate mitigation to be included in the assessment process.

1.8.1.2 Summary of HRA Best Value Plan (Pre-2050) In-combination Assessment

The HRA in-combination assessment, undertaken for the Best Value Plan, is presented in full in Appendix H of the Environmental Report. In summary at the current stage of the assessment, the assessment identified that there are numerous options within the Best Value Plan (Pre-2050) that have the potential for in-combination effects on Natura 2000 sites due to the construction and/or operational phase. However, it should be noted that the HRA ToLS (Stage 1) information was predominately used to inform the HRA in-combination assessment as HRA Appropriate Assessment (Stage 2) information was not made available by all the water companies at the time of assessment. It is recommended that the HRA in-combination effects assessment is re-visited once AA information is available to allow appropriate mitigation to be included in the assessment process. At this stage in the options design, it is not possible to identify and quantify in more detail the potential in-combination effects on the Natura 2000 sites. Further assessments of these potential affects will be undertaken ahead of the finalisation of the plan, taking account of information from member water companies, including appropriate mitigation to be included in the assessment process.

1.8.1.3 Summary of WFD Best Value Plan (Pre-2050) In-combination Assessment

The WFD in-combination assessment, undertaken for the Best Value Plan, is presented in full in Appendix I of the Environmental Report. In summary at the current stage of the assessment, the WFD in-combination assessment identified that there are 29 waterbodies which are impacted by two or more Best Value Plan (Pre-2050) options where at least one intersects 500m water company boundary corridors. Of these waterbodies, 23 are assessed as having no risk of in-combination effects and thus no increased risk of WFD deterioration within these waterbodies. In five of the remaining waterbodies, in combination effects have been identified but there is not anticipated to be changes to the overall WFD risk to the waterbody. In the final water body, the in-combination effects assessment identified a potential risk of WFD deterioration to the GB40701G505200: Chichester Chalk groundwater body as a result of the simultaneous operation of two drought permit options. The assessment suggested that in the event of a drought event where both emergency drought groundwater options were operational, an in-combination effect would occur which could lead to temporary reduction in groundwater levels, leading to potential changes in the water balance and surface water dependant status elements. These effects would be mitigated through the Drought Plan and drought permitting process. Further assessments of these potential affects will be undertaken ahead of the finalisation of the plan, taking account of information from member water companies, including appropriate mitigation to be included in the assessment process.



1.8.1.4 Summary of NCA and BNG Best Value Plan (Pre-2050) In-combination Assessment

The NCA and BNG in-combination assessment, undertaken for the Best Value Plan, is presented in full in Appendix J of the Environmental Report. At the current stage of the assessment, two of the options within the Best Value Plan (Pre-2050) result in the overall net increase in ecosystem services. The options are both reservoirs and the overall net increase in ecosystem services can be accounted to the addition of habitat creation associated with their reservoir landscape plans. The options are expected to generate new services during operation including the provision or recreational and amenity value due to their landscape plans, offering recreation & amenity benefits to the public. Further assessments of these potential affects will be undertaken ahead of the finalisation of the plan, taking account of information from member water companies , including appropriate mitigation to be included in the assessment process.

At the current stage of the assessment, most of the options in the Best Value Plan (Pre-2050) result in a net loss of BNG which can be accounted to the temporary and permanent loss of habitats as a result of the construction of the options. However, the BNG results for the Draft Regional Plan are an indicator of each options impact on BNG as their overall net unit change for BNG do not include the catchment management options which have the potential to provide BNG and additional benefits. There are four options that result in an overall net gain in BNG for the Best Value Plan selected pre-2050. These are new reservoirs and the overall net gain in BNG can be accounted to the addition of new surface water that is created during construction. Additionally, two of the options results in habitat creation associated with their reservoir landscape plans. However, it should be noted that Ancient Woodland is excluded from the Defra BNG 2.0 metric and therefore there may be negative effects which are not captured.

Table 1.4: SEA Scoring Summary for the Best Value Plan, Least Cost Plan and Best Environmental and Societal Plan (Pre-2050)

		Best Value Plan (Pre-2050)							Least Cost Plan (Pre-2050)							Best Environmental and Societal Plan (Pre-2050)									
		Const	ruction	Оре	ration	Constr	ruction	Oper	ration	Const	ruction	Oper	ation	Constr	ruction	Оре	ration	Const	ruction	Oper	ation	Const	ruction	Opera	ation
		Pre-mi	tigation	Pre-m	itigation	Post-mi	itigation	Post-m	itigation	Pre-mi	tigation	Pre-mi	igation	Post-mi	itigation	Post-m	itigation	Pre-mi	tigation	Pre-mi	tigation	Post-m	itigation	Post-mi	tigation
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)	0		+++		0		+++		0		+++		0		+++		0		+++		0		+++	
Soil	Protect and enhance the functionality, quantity and quality of soils	0		++	-	0	-	++	0	0		++	-	0	-	++	0	0		++	-	0	-	++	0
	Increase resilience and reduce flood risk	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0
Water	Protect and enhance the quality of the water environment and water resources	0		+++		0	-	+++		0		+++		0	-	+++		0		+++		0	-	+++	
	Deliver reliable and resilient water supplies	0	0	+++	0	0	0	+++	0	0	0	+++	0	0	0	+++	0	0	0	+++	0	0	0	+++	0
Air	Reduce and minimise air emissions	0		0	-	0	-	0	-	0		0	-	0	-	0	-	0		0	-	0	-	0	-
Climatic	Reduce embodied and operational carbon emissions	0		0		0		0		0		0		0		0		0		0		0		0	
Factors	Reduce vulnerability to climate change risks and hazards	0	0	++		0	0	++	-	0	0	++		0	0	++		0	0	++		0	0	++	
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0		++	0	0		++	0	0		++	0	0		++	0	0		++	0	0		++	0
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	0		0	0	0		0	0	0		0	0	0		0	0	0		0	0	0		0	0
Population and Human Health	Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	0	-	+	0	0	-	+	0	0	0	-	+	0	-	+	0	0		+	0	0	-	+	0
	Maintain and enhance tourism and recreation	0	-	+	0	0	-	+	0	0	0	-	+	0	-	+	0	0	-	+	0	0	-	+	0
Material Assets	Minimise resource use and waste production	+		+	0	+		+	0	+		+	0	+	-	+	0	+		+	0	+	-	+	0



Page 26 of 35

	Best Value Plan (Pre-2050)											Least Cost Plan (Pre-2050)								Best Environmental and Societal Plan (Pre-2050)						
		Construction Operation Construction Pre-mitigation Pre-mitigation Post-mitigation		uction tigation	Operation Post-mitigation		Construction Pre-mitigation		Operation Const Pre-mitigation Post-m		Construction Operation Post-mitigation Post-mitigation		Construction Pre-mitigation		Operation Pre-mitigation		Construction Post-mitigation		Operation Post-mitigation							
SEA Topic	SEA Objective								-	+							-	+								
	Avoid negative effects on built assets and infrastructure	0		0	0	0	-	0	0	0		0	0	0	-	0	0	0		0	0	0	-	0	0	





1.8.2 Draft Regional Plan (Post 2050)

The list of options in each of the three Plans within the 500m buffers, selected pre-2050, are presented in HRA and WFD in-combination assessments have also been undertaken on the Best Value Plan and the results have been used to inform the biodiversity and water objective in the SEA cumulative assessment. The results of the HRA and WFD in-combination assessment are presented in full in Appendix H and G of the Environmental Report respectively. BNG and NCA in-combination assessments were also undertaken with results presented in Appendix J of the Environmental Report

Table 1.5. As explained in Section 1.7.3, the post 2050 options have been assessed separately because up to 2050 is the 25-year statutory WRMP period and after this the plan becomes the regional strategy with uncertainty related to planning scenarios and technical improvements for options. Options without defined geographical locations such as TUBS, NEUBS, catchment management options, media campaigns and demand management options are not included in HRA and WFD in-combination assessments have also been undertaken on the Best Value Plan and the results have been used to inform the biodiversity and water objective in the SEA cumulative assessment. The results of the HRA and WFD in-combination assessment are presented in full in Appendix H and G of the Environmental Report respectively. BNG and NCA in-combination assessments were also undertaken with results presented in Appendix J of the Environmental Report

Table 1.5 but have been considered within the cumulative effects assessment.

HRA and WFD in-combination assessments have also been undertaken on the Best Value Plan and the results have been used to inform the biodiversity and water objective in the SEA cumulative assessment. The results of the HRA and WFD in-combination assessment are presented in full in Appendix H and G of the Environmental Report respectively. BNG and NCA in-combination assessments were also undertaken with results presented in Appendix J of the Environmental Report

Table 1.5: Options within each Plan within the water	r company buffers (Post-2050)
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Option Name	BVP	BESP	LCP
Desalination: Isle of Sheppey (10MI/d) Phase 2		\checkmark	
Desalination: Tidal River Arun (20MI/d)		\checkmark	
Groundwater Development - Confined Chalk North London		\checkmark	\checkmark
New Bulk Supply: SESW Outwood to SEW Whitely Hill (5MI/d)			\checkmark
Import from South East Water			\checkmark

1.8.2.1 Summary of Programme Appraisal (Post 2050)

A summary of the SEA is presented in Table 1.6 which outlines the scoring identified for each of the SEA objectives for each of the three plans. This is considered to be an appropriate level of assessment at this draft regional plan stage and the need for further assessment of alternatives will be considered following draft plan consultation, and taking account of information from our member water companies and consultation on their draft WRMPs.

The cumulative assessment results identified across the Least Cost Plan and Best Environmental and Societal Plan are similar. The Best Value Plan is similar in some respects, however as it does not contain any options located within the water company boundary buffers, neutral effects are identified for several of the SEA objectives. Neutral effects are also identified for the Least Cost Plan and Best Environmental and Societal Plan as although they contain options located within the boundary buffers,



no in-combination effects are likely given the distance between options and absence of overlapping construction periods.

At the current stage of assessment, major and moderate positive residual effects are identified across numerous multiple SEA topics and objectives due to the inclusion of the catchment management and demand management schemes within the three plans. SEA objectives with positive residual effects include biodiversity, flora and fauna, soils; flood risk; water environment; climate resilience; landscape; and population and human health. The catchment management schemes include options such as river restoration, wetland creation and enhancement, and terrestrial habitat creation/management, natural flood management, education and engagement, which are likely to contribute to cumulative positive effects.

Major negative residual effects are identified for the construction phase of the Best Value Plan, and for both the construction and operational phases of the Least Cost Plan and the Best Environmental and Societal Plan, due to potential for in-combination effects on Natura 2000 sites. The HRA in-combination assessment undertaken for the Best Value Plan identified that there are potential for in-combination construction as a result of numerous options. Although HRA in-combination assessments were not undertaken for the two alternative plans, major negative effects were identified as a worst-case scenario.

The Best Value Plan was no identified to have any residual (or pre-mitigation) negative effects. The WFD in-combination assessment undertaken on the Best Value Plan identified two water bodies have the potential to be impacted by two or more options from different water companies. However, it was identified that there was no risk of in-combination effects and thus no increased risk of WFD deterioration within these waterbodies. Moderate negative residual effects were identified for construction and operational phases of the Least Cost Plan and the Best Environmental and Societal Plan in relation to the SEA objective on the water environment. However, these are identified on a precautionary approach as WFD in-combination assessments have not been carried out.

For the Least Cost Plan and Best Environmental and Societal Plan, major negative residual effects have also been identified for the objective on carbon emissions for both construction and operation due to the cumulative impact materials used to construct the new infrastructure and construction activities (embodied carbon), and from operation. Moderate negative residual effects have been identified for all three plans in relation to climate resilience given the cumulative effect of options which involve groundwater or surface water abstraction, particularly during periods of drought, which will reduce the resilience of the natural environment to climate change. The Least Cost Plan and Best Environmental and Societal Plan is identified to identified to have moderate negative residual effects on material assets due to the resource use and waste which will be cumulatively generated through the construction phase.

Further assessments of these potential affects will be undertaken ahead of the finalisation of the plan, taking account of information from our member water companies, including appropriate mitigation to be included in the assessment process.

1.8.2.2 Summary of HRA Best Value Plan (Post-2050) In-combination Assessment

The HRA in-combination assessment, undertaken for the Best Value Plan, is presented in full in Appendix H of the Environmental Report. At the current stage of assessment and as summarised above, the assessment identified that there are numerous options within the Best Value Plan (Post-2050) that have the potential for in-combination effects on Natura 2000 sites due to the construction and/operational phase. However, it should be noted that the HRA ToLS (Stage 1) information was predominately used to



inform the HRA in-combination assessment as HRA Appropriate Assessment (Stage 2) information was not made available by all the water companies at the time of assessment. It is recommended that the HRA in-combination effects assessment is re-visited once AA information is available to allow appropriate mitigation to be included in the assessment process. At this stage in the options design, it is not possible to identify and quantify in more detail the potential in-combination effects on the Natura 2000 sites. Further assessments of these potential affects will be undertaken ahead of the finalisation of the plan, taking account of information from our member water companies, including appropriate mitigation to be included in the assessment process.

1.8.2.3 Summary of WFD Best Value Plan (Post-2050) In-combination Assessment

The WFD in-combination assessment, undertaken for the Best Value Plan, is presented in full in Appendix I of the Environmental Report. At the current stage of assessment and in summary, the assessment identified two water bodies impacted by two or more options from different water companies. However, it was identified that there was no risk of in-combination effects and thus no increased risk of WFD deterioration within these waterbodies.

1.8.2.4 Summary of NCA and BNG Best Value Plan (Post-2050) In-combination Assessment

The NCA and BNG in-combination assessment, undertaken for the Best Value Plan, is presented in full in Appendix J of the Environmental Report. At the current stage of assessment, there are no options expected to result in an overall net increase in ecosystem services for the BVP options selected post-2050. There is one new reservoir option selected in the Best Value Plan (Post-2050) which is identified to have an overall net gain in BNG can be accounted to the addition of new surface water that is created during construction.

		Best Value Plan (Post-2050)								Least Cost Plan (Post-2050)									Best Environmental and Societal Plan (Post-2050)							
		Construction Pre-mitigation		n Operation on Pre-mitigation		Construction Post-mitigation		Oper	ration	Construction		Oper	ation	Consti	ruction	Орен	Operation		Construction		Operation		Construction		Operation	
								Post-mitigation		Pre-mitigation		Pre-mitigation		Post-mitigation		Post-m	Post-mitigation		Pre-mitigation		tigation	Post-mitigation		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)	0		+++	0	0		+++	0	0		+++		0		+++		0		+++		0		+++		
Soil	Protect and enhance the functionality, quantity and quality of soils	0	0	++	0	0	0	++	0	0	-	++	0	0	-	++	0	0		++	0	0	-	++	0	
Water	Increase resilience and reduce flood risk	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	
	Protect and enhance the quality of the water environment and water resources	0	0	+++	0	0	0	+++	0	0		+++		0		+++		0		+++		0		+++		
	Deliver reliable and resilient water supplies	0	0	0	0	0	0	0	0	0	0	+++	0	0	0	+++	0	0	0	+++	0	0	0	+++	0	
Air	Reduce and minimise air emissions	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Climatic	Reduce embodied and operational carbon emissions	0	0	0	0	0	0	0	0	0		0		0		0		0		0		0		0		
Factors	Reduce vulnerability to climate change risks and hazards	0	0	++		0	0	++		0	0	++		0	0	++	-	0	0	++		0	0	++		
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	0	0	++	0	
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Population and Human Health	Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	0	0	+	0	0	0	+	0	0	0	+	0	0	0	+	0	0	0	+	0	0	0	+	0	
	Maintain and enhance tourism and recreation	0	0	+	0	0	0	+	0	0	0	+	0	0	0	+	0	0	0	+	0	0	0	+	0	

Table 1.6: SEA Scoring Summary for the Best Value Plan, Least Cost Plan and Best Environmental and Societal Plan (Post-2050)



	Best Value Plan (Post-2050)										Least Cost Plan (Post-2050)									Best Environmental and Societal Plan (Post-2050)							
		Construction Pre-mitigation		Operation Pre-mitigation		Construction Post-mitigation		Operation Post-mitigation		Construction Pre-mitigation		Operation Pre-mitigation		Construction Post-mitigation		Operation Post-mitigation		Construction Pre-mitigation		Operation Pre-mitigation		Construction Post-mitigation		Operation Post-mitigation			
SEA Topic	SEA Objective								-	+							-	+									
Material Assets	Minimise resource use and waste production	+	0	0	0	+	0	0	0	+		0	0	+		0	0	+		0	0	+		0	0		
	Avoid negative effects on built assets and infrastructure	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		





1.9 Mitigation and Monitoring

1.9.1 Mitigation and Enhancement Measures

Mitigation measures and enhancement opportunities are identified in the individual option assessments and in the cumulative and in-combination effects assessments. A summary of the high-level plan wide measures is provided below:

- General construction best practice measures to be implemented to reduce effects on air, water, flora and fauna, landscape, heritage, soils and communities.
- HRA Appropriate Assessment, WFD Level 2 assessment and INNS assessment will be required for a number of the selected options and specific mitigation will be developed as part of this process.
- Opportunities for habitat creation and habitat enhancement will be further investigated through WRMP24 and options design. Some options such as reservoirs already have habitat creation designed into proposals. Opportunities for BNG and links with nature recovery networks will be further investigated at the WRMP24 level.
- Land disturbed temporarily for construction (e.g. laying pipelines) will be reinstated to the same or better quality. There are potential opportunities to connect with nature recovery networks to provide habitat restoration.
- Use of directional drilling under sensitive assets such as river, motorways, railway lines and certain designated sites.
- Opportunity to use renewables during construction and operation for energy supply and use of materials with lower embodied carbon should be investigated. A carbon footprint study could help identify areas for carbon savings or alternative materials.
- For options that may change water levels, monitoring of river or reservoir water levels and flows may be required. This is more significant if the reservoir or river is also a designated site.
- Appropriate layout and landscape design to screen new treatment plants and buildings and provide habitat.
- Certain options may need the pipelines slightly re-routing to avoid designated sites and historic assets.
- Best practice mitigation to avoid impacts on historic assets. Archaeological Watching Brief may be required during the construction phase.
- Reservoir options have a large potential to provide both environmental and social benefits and should be designed to maximise multiple benefits.

WRSE are currently looking at options that have flagged as having potential cumulative effect so identify whether solutions can be put place that either scale up nearby alternatives, change the environmental destination delivery profile or costs for a larger mitigation package to allow the options to be retained.

The options within the Draft Regional Plan are assessed strategically at a regional level as part of WRSE which informs the SEAs of the water companies WRMPs, alongside HRA, WFD and BNG and NCA where relevant. As the options progress into projects, Environmental Impact Assessment should be applied where required to avoid likely significant effects.



1.9.2 Monitoring Proposals

Monitoring will be carried out by the water companies as part of their WRMP process. Monitoring helps ensure that the identified SEA objectives are being achieved and allows for early identification of unforeseen adverse effects and thus appropriate remedial action can be taken. Monitoring will be an important requirement to measure performance and ensure the WRMP is being successfully implemented. The DCLG guidance states that it is inappropriate to monitor everything, and monitoring proposals should be focused on the following areas:

- Identify potential breaches of international, national, or local legislation, recognised guidelines, or standards.
- Actions which may give rise to irreversible damage, with a view to identifying trends before such damage occurs.
- Where there was any uncertainty in the SEA and where monitoring would enable prevention or mitigation measures to be taken.

Monitoring proposals will be developed in the WRMP SEA but may include the following examples:

- Ecological and chemical status of water bodies
- Achievements against WFD objectives
- Number of supply disruptions per annum
- % of habitat creation or existing habitat enhancement
- Area (hectares) and number of statutory and non-statutory ecological sites that will be harmed or lost to WRMP options
- Area of both blue and green infrastructure created
- River flow levels
- Area of agricultural land (by grade) lost due to the need for water resource options/infrastructure
- Number of geological sites affected
- Number of historic assets damaged by a WRMP option
- Number of historic assets enhanced by options
- Reduction of greenhouse gas emissions per MI/d
- Energy use from new operations and change in energy use per MI/d
- % energy supplied by renewable sources
- Reduction of operational and capital carbon emissions
- % of A-Rated, recycled, reused material used in infrastructure options
- Number of options that utilise existing infrastructure
- Volume of waste generated
- Waste disposal method by %
- Number of, and attendance levels at public engagement events
- Number of tourism assets created
- Number of apprenticeships
- Number, type, and area of community assets created
- Km of new footpath/cycleways



1.10 Consultation and Next Steps

1.10.1 Environmental Report Consultation

This draft Environmental Report is being issued for public consultation alongside the Draft Regional Plan for a 12-week period in November 2022. This will allow the public and the consultation bodies to feed into the next stage of the SEA and updated Environmental Report for the final Regional Plan.

1.10.2 Next steps

Following consultation, a consultation log of responses will be produced and will record the comments received from the Statutory Consultees and the public, and the action taken to address them. The Environmental Report will be updated to reflect consultation comments and the consultation log will be appended to the final Environmental Report.

As the final Regional Plan is developed, the SEA will be updated to reflect the selected options and potential cumulative and in-combination effects. The Environmental Report will be updated to take into account any changes between the draft WRSE Regional Plan as it develops into the final Regional Plan. Alongside this the HRA Appropriate Assessment, WFD Level 2 assessments and INNS assessment will be undertaken, and the results used to inform the plan development and SEA.