MOTT MACDONALD

South West Water Draft Water Resources Management Plan 2024 (WRMP24)

Strategic Environmental Assessment (SEA) Environmental Report

February 2023

Mott MacDonald
Endeavour House
Pynes Hill
Exeter EX2 5WH
United Kingdom

T +44 (0)1392 409410
mottmac.com
South West Water Ltd.

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	02/08/22	K. Mason	-	M. Reid	Working Draft report
B	31/08/22	K. Mason	A. Cox	M. Reid	Draft report
C	29/09/22	K. Mason	A. Cox	M. Reid	Report for consultation
D	10/11/22	R. Izzard	G. Luck	N. Spofforth /M. Reid	Report for consultation with amended options and updated appendices
E	21/12/22	L. Owen	G. Luck	K. Mason	Updated BVP
F	30/01/23	G. Luck	K. Mason	M. Reid	Updated Appendices to include updated BVP for consultation

Document reference: 100107117 | 100107117-MMD-RP-SEA-006-F | F |

Information class: Standard

Contents

Tables

Figures

Abbreviations

AA	Appropriate Assessment
ACWG	All Company Working Group
AMP	Asset Management Plan
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Areas
ASR	Aquifer Storage and Recovery
BAP	Biodiversity Action Plan
BNG	Biodiversity Net Gain
CFMP	Catchment Flood Management Plans
CWS	County Wildlife Sites
CPRE	Campaign for Rural England
CROW	Countryside and Rights of Way
CO_2	Carbon Dioxide
Defra	Department for Environment, Food and Rural Affairs
DFLE	Disability-Free Life Expectancy
DWMP	Drainage and Wastewater Management Plans
EU	European Union
GHG	Greenhouse Gas
GIS	Geographic Information System
ha	Hectares
HER	Historic Environment Record
HRA	Habitats Regulations Assessment
IMD	Index of Multiple Deprivation
INNS	Invasive Non-Native Species
JNCC	Joint Nature Conservation Committee
$ktCO_2$	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 Protection Area
NBS	Nature Based Solutions
NCLA	National Character Landscape Area
NCA	Natural Capital Assessment
NERC	Natural Environment and Rural Communities
NNR	National Nature Reserve
NO_2	Nitrogen Dioxide
NPPF	National Planning Policy Framework
NRN	Nature Recovery Network
PERT	Poole Effluent Recycling & Transfer
PM	Particulate Matter
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SRO	Strategic Resource Option
SSSI	Sites of Special Scientific Interest
SWLT	South West Lakes Trust
SWW	South West Water
ToLS	Test of Likely Significance
UK	United Kingdom
UKCP18	UK Climate Projections 2018
UKWIR	UK Water Industry Research
UN	United Nations
WAFU	Water Available for Use
WCWR	West Country Water Resources
WFD	Water Framework Directive
WINEP	Water Industry National Environment Programme

WISER	Water Industry Strategic Environmental Requirements
WRMP	Water Resource Management Plan
WRZ	Water Resource Zone
WTW	Water Treatment Works

Executive summary

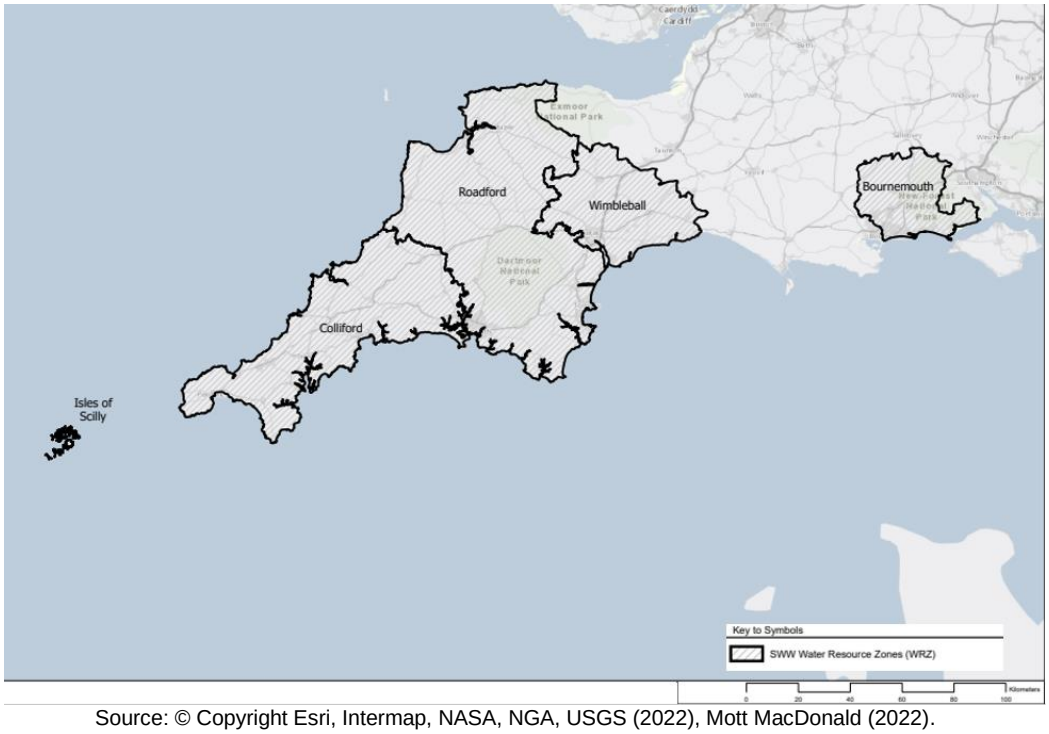
Introduction

Water companies have a statutory obligation to produce a Water Resources Management Plan (WRMP) every five years, which sets out how a company intends to maintain the balance between supply and demand for water over a minimum 25-year period. In the development of a WRMP, companies must follow the Water Resource Planning Guidelines[1] ('Guidelines'). WRMPs should ensure a secure and sustainable supply of water, as well as focus on efficiently delivering the outcomes that customers want, while reflecting the value that society places on the environment.

The South West Water (SWW) supply area covers Devon, Cornwall, the Isles of Scilly and parts of Dorset, Somerset, Wiltshire and Hampshire, and provides drinking water to a population of 1.7 million. Water resources in the SWW supply area consist of three large reservoirs, a number of smaller reservoirs, river intakes, and some groundwater sources which are located predominantly in East Devon.

The SWW supply area is split into five Water Resource Zones (WRZs) in total. Three WRZs are operated in conjunction with one another to maximise water availability, these are Colliford, Roadford, and Wimbleball WRZs. Bournemouth WRZ and Isles of Scilly WRZ operate independently. The five WRZs are outlined in **Figure 0.1** below.

Figure 0.1: South West Water WRZs



Source: © Copyright Esri, Intermap, NASA, NGA, USGS (2022), Mott MacDonald (2022).

A Strategic Environmental Assessment (SEA), and therefore the production of this Environmental Report, is a statutory requirement which must be consulted on alongside the draft SWW WRMP24 (the Plan) as part of the evidence base which explains any likely

[1] EA, NRW, Defra and Ofwat (2022) *Water Resources Planning Guideline*. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

significant effects resulting from the Plan. The Plan will run from 2024 for a minimum period of 25 years[2].

The purpose of this Environmental Report is to present the results of the SEA of the draft Plan including the potential environmental and sustainability effects (positive and negative) of the options included within the draft Plan. By carrying out the SEA of the Plan, it enables the opportunity to improve options in terms of their potential environmental effects and allows for mitigation measures to be devised where necessary. The SEA therefore is a tool used to steer plan-making and avoid adverse impacts.

Table 0.1 below outlines the relevant sections within the SEA Environmental Report where further information related to each section within this Executive Summary can be found.

Table 0.1: Signposting to relevant sections in SEA Environmental Report

Executive Summary Sections	Sections in Environmental Report with Further Information
The SEA Process	**Section 1.2** & **Annex 1: Appendix A2.2**
SEA Screening and Scoping	**Section 3**
Relationships with other Policies, Plans and Programmes	**Section 4**4
Baseline and Future Baseline Overview	**Section 5**& **Annex 1: Appendix C**
Key Environmental Issues and Opportunities	**Section 6.1**
SEA Framework	**Section 7** & **Annex 1: Appendix E**
Environmental Assessment Methodology	**Section 8.1**
SEA Findings	Summary SEA findings for each Water Resource Zone (WRZ) can be found in **Sections 9.2– 9.8** of the Environmental Report. The summary findings of the HRA, WFD, INNS and NCA/ BNG Assessments can be found within **Sections 9.9 – 9.12**. Detailed findings are presented in **Annex 2: Appendix H**; **Annex 3: Appendix I**; **Annex 4: Appendix J**; **Annex 5: Appendix K**; and **Annex 6: Appendices L-Q**.
Cumulative Effects	**Section 10.5**
Mitigation and Monitoring	**Section 11**
Consultation and Next Steps	**Section 12**

[2] GOV UK (2022) *Developing your WRMP* (Part 1.3). Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline. Date accessed: 26/09/2022

The SEA Process

A SEA is required for the draft SWW WRMP 2024 ('WRMP24') under the *Environmental Assessment of Plans and Programmes Regulations 2004* ('SEA Regulations')[3], which require an assessment of the effects of certain plans and programmes on the environment.

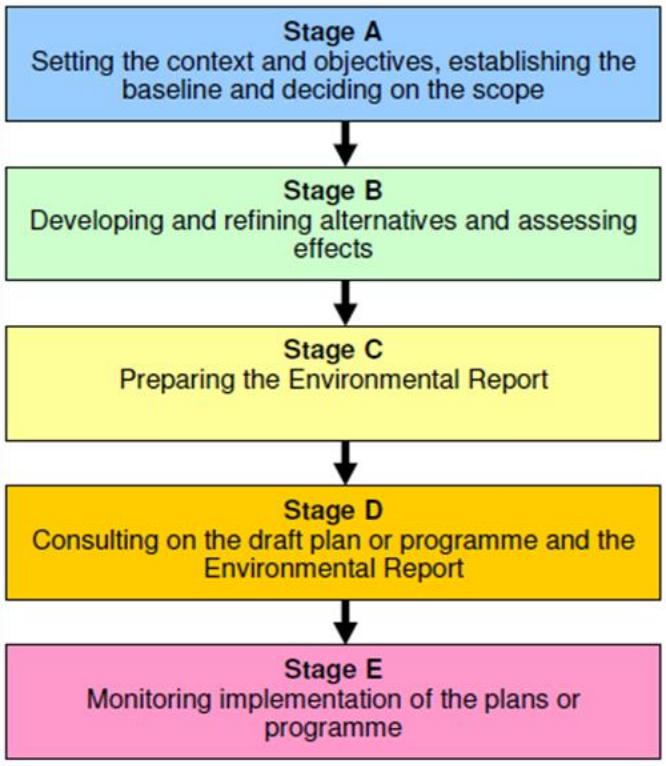
The SEA works to inform the decision-making process through the identification and assessment of significant and cumulative effects that a plan or programme may have on the environment. The SEA process is conducted at a strategic level and enables consultation on the potential effects of the Plan with a wide range of stakeholders.

This Environmental Report summarises the SEA process and provides a strategic-level assessment of the proposed options and draft WRMP. This provides a high-level initial assessment of potential sustainability risks and opportunities to help the development of the options in the draft WRMP. It should be noted that residual risks for each option may change in future with further detailed assessments and refinement of options, plus further development of mitigation measures. Any options taken forward in future for implementation would undergo further detailed review and site assessment outside of the SEA process, prior to any construction or other implementation works taking place.

Figure 0.2 outlines the SEA process and the stage in the process which is marked by the production of the Environmental Report.

[3] The SEA Regulations were transposed into United Kingdom (UK) law from the European Union Directive 2001/42/EC, more commonly known as the SEA Directive. The SEA Regulations remain UK law following the UK's exit from the EU. Available at: https://www.legislation.gov.uk/uksi/2004/1633/contents/made (Date accessed: 26/09/22)

Figure 0.2: SEA Process Stages



Current Status of the Project

The SWW WRMP24 SEA is currently at Stage D of the process. This draft SEA Environmental Report has been issued for consultation for three months from February to May 2023. During the consultation period stakeholders have a chance to comment on the findings and outputs of the SEA and supporting environmental assessments.

Source: A Practical Guide to the Strategic Environmental Assessment Directive, 2005[4]

This SEA Environmental Report presents the findings of the SEA of the WRMP24. Specifically, it aims to:

- Assess the potential sustainability impacts and opportunities for enhancement for the draft SWW WRMP24 options;
- Inform the WRMP24 decision-making process through the identification and assessment of significant and cumulative effects that the draft WRMP24 may have on the environment; and
- Provide an opportunity to engage and collaborate with the Consultation Bodies[5].

This SEA Environmental Report has been issued for consultation with the Environment Agency (EA), Natural England (NE) and Historic England (HE) for a three-month consultation period from February to May 2023. Once the consultation period has finished, all consultation responses will be carefully reviewed and tabulated, and taken into account as far as possible. Details of how the results of the consultation responses have been taken into account by SWW will be reported in the SEA Post-Adoption Statement (to be published following adoption of the Final SWW WRMP24).

The SEA is integrated with other environmental assessments, including the HRA, WFD NCA, BNG Assessment and INNS Assessment. The findings of these assessments have been incorporated into the SEA, and the studies have been included as stand-alone Technical Notes in **Annex 2: Appendix H; Annex 3: Appendix I; Annex 4: Appendix J; and Annex 5: Appendix K** respectively of the SEA Environmental Report.

The SEA ensures compliance with legislative requirements and plan-making guidelines by assessing the sustainability of various water management options within the SWW region. This

[4] DCLG (2005) *A 'Practical Guide to the Strategic Environmental Assessment Directive', Pages 26 – 29.* Available at: https://www.gov.uk/government/publications/strategic-environmental-assessment-directive-guidance

[5] The Consultation Bodies are: Natural England, Historic England, and the Environment Agency.

informs decision making for the development of the draft SWW WRMP24 and ensures that water demand is met over the Plan period.

SWW also falls under the West Country Water Resources (WCWR) Regional Plan. The WCWR Draft Regional Plan has been reviewed to ensure the proposed approach to the SEA aligns with the Plan.

The SEA topics which require assessment are outlined within Schedule 2 (6) of the SEA Regulations[6]. These are as follows:

- Biodiversity;
- Population;
- Human health;
- Fauna;
- Flora;
- Soil;
- Water;
- Air;
- Climatic factors;
- Material assets;
- Cultural heritage, including architectural and archaeological heritage; and
- Landscape.

Based upon these topics, 16 SEA objectives were developed through a review of policies, plans and programmes, local baseline conditions and likely future trends of the SWW region, the key priorities for SWW and also through a review of the SEA objectives used for WRMP19 and WRMP24 by other water companies in England. The objectives reflect the sustainability aspirations of the WRMP24. The Plan options have been assessed against these SEA objectives to analyse their potential for significant effects against various receptors associated with each SEA topic.

SEA Screening and Scoping

Water companies, as responsible authorities, must determine if their WRMP falls within the scope of the SEA Directive. The Plan has been screened to determine whether an SEA is required, i.e. if the Plan is likely to have significant effects under any of the SEA topics. The Plan was found to meet the criteria which require an SEA.

The Scoping Stage of the SEA process set the context and scope of the SEA and Environmental Report. Specifically, the scoping stage aimed to:

- Review relevant international, national and local policies, plans and programmes and their implications for the WRMP;
- Establish the baseline environmental and socio-economic information and key sustainability issues and opportunities for the draft SWW WRMP24 area;
- Set the context and objectives of the SEA;
- Decide on the scope for the SEA, ensuring that it covered all the likely significant environment effects of the WRMP; and
- Provide an opportunity to engage and collaborate with the Consultation Bodies[7].

[6] The Assessment of Plans and Programmes Regulations (2004). Available at: https://www.legislation.gov.uk/uksi/2004/1633/schedule/2/made

[7] The Consultation Bodies are: Natural England, Historic England, and the Environment Agency

The scoping report was issued for formal consultation for five weeks between 6th May and 9th June 2022. During the consultation period, statutory Consultation Bodies and other key stakeholders (including the public) had the opportunity to comment on the proposed scope and approach for the SEA. The comments received from the formal consultation process and the resulting updates were incorporated into to the SEA Environmental Report and assessments.

Relationships with other Policies, Plans and Programmes

The SEA Regulations (Schedule 2 (1 and 5)) require "*an outline of the contents and main objectives of the plan or programme, and of its relationship with other relevant plans and programmes" and "the environmental protection objectives… 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".*

New Water Resource Planning Guidelines were published by the EA, Natural Resources Wales (NRW) and Ofwat for the SWW WRMP24 in 2022. The Guidelines set out the framework and requirements for developing a WRMP with the objective 'to efficiently deliver resilient, sustainable water resources for customers and the environment, both now and in the long term'[8]. The draft SWW WRMP24 should also reflect the Government's 25-year Environment Plan, including:

- Setting out ambitions for environmental sustainability and resilience;
- Supporting nature recovery;
- Using natural capital in decision-making;
- Using a catchment approach;
- Delivery of net gain for the environment;
- Impact of climate change with regard to river flows and groundwater recharge, and any future supply options;
- Issue of spread of INNS and proposed measures to mitigate that risk;
- Enhancing the natural resilience of catchments by effective catchment management planning, to increase the amount and/or quality of water available for abstraction without posing unacceptable pressures on the environment; and
- Consider whether abstractions are truly sustainable, looking across a catchment as a whole.

Relevant policies, plans and programmes to the SEA of the Plan are listed within **Table 4.1** of the SEA Environmental Report. These include international, European, national, regional, local policies, plans and programmes and those produced by SWW, covering topics such as wildlife and habitat protection, air quality standards and climate change. The SWW Environment Plan to 2050 (2019) and SWW & Bournemouth Water Final Water Resources Management Plan (2019) are key examples of plans which helped to shape the priority topics for the Plan. Additionally, the Plan helps to promote the achievement of objectives within other plans, such as the UK Government's 25-Year Environment Plan.

Baseline and Future Baseline Overview

The SEA Regulations require that "*the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the Plan or Programme"* are identified. Current environmental and socio-economic baseline information was collated and reviewed for the SWW region. Key trends were identified and included likely future scenarios without the WRMP such as the continued increase in population and subsequent demand on water processing and supplies, extreme weather events linked to climate change and the continued

[8] EA, NRW and Ofwat (2022) Water Resources Planning Guideline, Section 1.1.1. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

protection of species and habitats through international and national legislation. Prediction of future trends is complex because they depend on a wide range of global, national and regional factors and decision making.

The baseline was collected from published sources and forms an evidence base against which environmental issues or opportunities resulting from the Plan can be assessed. The baseline information is presented under the SEA Regulations topics:

- **Biodiversity, Flora, and Fauna:** The SWW region is rich in biodiversity and includes a large stretch of coastline which supports a range of habitats. There are many designated and non-designated biodiversity sites within the region, including priority habitats which make up 18% of the total SWW region area.
- **Water:** Bournemouth and Isles of Scilly WRZs are classed as regions with serious water stress, with the regions of Devon and Cornwall also experiencing pressure on water resources. Additional water stress is anticipated as a result of climate change alongside population and economic growth. Wastewater and the physical modification of watercourses contributes to the decline in water quality within the SWW region. Flood risk varies around the region and is expected to be exacerbated by climate change.
- **Soil:** The SWW region has a strong agricultural presence where soils are predominantly Agricultural Land Classification (ALC) Grades 3 and 4, with some areas of Grade 1 land particularly within Devon. The region has a rich mining history and significant areas of peatland.
- **Air:** Air quality within the SWW is varied and pollutants are likely associated with industrial or transport activities. There are 27 Air Quality Management Areas (AQMAs) within the SWW region in total, which are areas where the national air quality objectives are not being met, particularly due to nitrogen dioxide (NO_2) and particulate matter (PM_{10}).
- **Climatic Factors:** Annual mean temperatures are projected to increase by 1.8°C[9] for parts of the SWW region as well as changes in seasonable variability regarding precipitation rates, with significant decreases in summer and increases in winter due to climate change.
- **Population and Human Health:** Approximately 3.1 million people live within the SWW region. Projections show that there is expected to be an increase of 300,000 people requiring a SWW supply by 2044/45. Life expectancy at birth for both males and females in the SWW region is higher than the England average. Tourism is an important sector within the SWW area, attracting visitors from across the UK and internationally.
- **Historic Environment:** The SWW region is rich in heritage with many designated and non-designated heritage assets, including high potential for unidentified archaeological remains in particular historic settings. Somerset is the only county within the SWW region which does not have a heritage asset identified to be “at risk”.
- **Landscape:** The landscape across the SWW region is comprised of uninterrupted views, scattered settlements and mixed agriculture, and includes the rugged coastlines of Cornwall and Devon. The region is situated within areas of high tranquillity.
- **Material Assets:** Road transport routes within the SWW region are limited in some areas with large parts of Cornwall relying on the A30 trunk road. The eastern areas of Devon are accessible from the M5 Motorway. Rail links within the SWW region connect rural areas, where rail travel can then be taken to Bristol and London. Incineration accounts for the most common waste disposal method by local authorities in the region.

Note: The draft SWW WRMP24 covers a large geographical area, and the baseline is therefore a high-level review of conditions within the region, rather than being location specific.

[9] Calculated using the RCP8.5 scenario at the 50th percentile against a 1981-2010 baseline.

Key Environmental Issues and Opportunities

The SEA Regulations (Schedule 2 (4)) require consideration of "*any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds (a) and the Habitats Directive"*.

A key stage in the scoping process is to determine which topics are relevant for the SWW WRMP24 SEA and which topics (if any) should be scoped out. It was considered that all the SEA Regulations topics are relevant to the draft SWW WRMP24 and therefore they have all been scoped in.

The key objectives and issues from the related plans and policies and trends of baseline and future baseline were reviewed to identify key environmental issues and opportunities for SWW and the WRMP for each SEA topic, and how the WRMP24 should seek to enhance the topic area. This includes potential issues such as developmental impacts on designated and non-designated biodiversity sites, impacts on watercourses and loss of soil resources. Enhancement opportunities relevant to the Plan include biodiversity integration with new infrastructure, supporting water-based habitats through increasing water levels in local watercourses and opportunities for peatland restoration.

SWW are developing a proposal to include a biodiversity fund in their final WRMP, which will look to mitigate some of the environment impacts noted and deliver overall BNG.

SEA Framework

A key part of the SEA Scoping process was the development of the SEA Assessment Framework. The Assessment Framework was used to undertake the assessment of the WRMP24 options, preferred plan and alternative plans.

The framework includes SEA objectives and indicators which were used to assess the options and plans to determine the potential sustainability effects arising from the implementation of the draft WRMP24. The Assessment Framework reflects the key sustainability issues and SWW's priorities which the SEA seeks to enhance in the draft WRMP24. The framework was developed and consulted upon as part of the SEA Scoping Stage.

An overarching set of 16 SEA objectives was developed, as shown in **Table 0.2** below. These are linked to the SEA Regulations topics, and have been informed by the review of policies, plans and programmes and their key requirements; the local baseline conditions and likely future trends of the SWW region; and the key issues, opportunities and priorities for SWW. They have also been informed by a review of the SEA objectives used for WRMP19 and WRMP24 by other water companies in England. The SEA objectives also support the SWW outcomes for customers and the environment; the Department for Environment, Food and Rural Affairs (Defra) '*Guiding Principles for water resource planning*'; and the Defra '*Creating a great place for living: Together we are building a green and healthy future*'.

Whilst the SEA objectives are presented under discrete topics, there are some overlaps between objectives with associated sub-themes. For example, the results of the HRA and WFD assessments fed into the SEA objectives for the biodiversity and water topics.

Assessment guide questions have been produced for each of the SEA objectives. These are used to guide the SEA assessment to ensure that the same factors are considered by all assessors for each objective. **Table 7.2** within the Environmental Report presents the assessment guide questions for the options and draft WRMP24 assessment.

The SEA assessment guide questions are supported by detailed SEA Assessment Scoring Criteria (see **Table 0.3** below as an example for the biodiversity topic) which set out how the

scale of effect is determined for each SEA objective. It also specifies key datasets used for the assessment of each objective.

Table 0.2: SWW WRMP24 SEA Objectives

SEA Topics	Number within summaries	SWW WRMP24 SEA Objectives
Biodiversity, Flora and Fauna	1.1	Protect and enhance designated and non-designated ecological sites
	1.2	Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity
	1.3	Reduce the spread or presence of INNS
Water	2.1	Protect and enhance the quality of the water environment and water resources
	2.2	Increase resilience and reduce flood risk
	2.3	Deliver reliable and resilient water supplies
Soil	3	Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance
Air	4	Reduce and minimise air emissions
Climatic Factors	5.1	Reduce embodied and operational carbon emissions
	5.2	Reduce vulnerability to climate change risks and hazards
Historic Environment	6	Conserve, protect and enhance the historic environment, including archaeology

SEA Topics	Number within summaries	SWW WRMP24 SEA Objectives
Landscape	7	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity
Population and Human Health	8.1	Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing
	8.2	Maintain and enhance tourism and recreation
Material Assets	9.1	Minimise resource use and waste production
	9.2	Avoid negative effects on built assets and infrastructure

Environmental Assessment Methodology

The approach to the environmental assessments for the draft SWW WRMP24 follows the Water Resources Planning (WRP) guidance and supplementary guidance[10]. The following environmental assessments have been undertaken:

- SEA;
- HRA – ToLS and AA;
- WFD Assessment – Levels 1 and 2;
- INNS – screening and detailed risk assessment;
- NCA; and
- BNG.

Information on the draft WRMP24 options has been provided by SWW, and the environmental assessments were undertaken based on both national and local datasets and information. The WRMP options have been assessed following the UKWIR SEA guidance[11]. The SEA assessment framework and scoring criteria described above was used to assess the potential positive and negative effects of each option, against each of the SEA objectives. An example of the scoring criteria used is shown in **Table 0.3** below.

[10] EA, NRW and Ofwat (2022) Water Resources Planning Guideline. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

[11] UKWIR (2021) Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans.

Table 0.3: Scoring Key

Effect	Description	Example Scoring Definitions – Biodiversity Objective
+++	Major Positive	The option would result in a major enhancement 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 moderate amount of creation or enhancement of habitat, promoting a major increase in ecosystem structure, function or connectivity The option would result in a major reduction or management of INNS
++	Moderate Positive	The option would result in a moderate enhancement on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures The option would result in a moderate increase in the population of a priority species Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a moderate increase in ecosystem structure, function or connectivity The option would result in a moderate reduction or management of INNS
+	Minor Positive	The option would result in a minor 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 minor 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 minor increase in ecosystem structure, function or connectivity The option would result in a minor reduction or management of INNS
0	Neutral	The option would not result in any effects on designated or non-designated sites including habitats and/or species. It will not have an effect on INNS

Effect	Description	Example Scoring Definitions – Biodiversity Objective
-	Minor Negative	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, function or connectivity The option would result in a minor increase or spread of INNS
--	Moderate Negative	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 small losses or degradation of habitat leading to a moderate loss of ecosystem structure, function or connectivity The option would result in a moderate increase or spread of INNS.
---	Major Negative	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
?	Uncertain	From the level of information available, the effect that the option would have on this objective is uncertain.

It should be noted that the SEA is a high-level initial assessment of likely risks and opportunities to help the development of the options in the draft WRMP. Residual risks for each option are subject to change in future with further detailed assessments and refinement of options. Mitigation measures are likely to be required and these will also undergo further development. This means that the scale of effects for each option currently identified in the SEA (i.e. minor/moderate/major positive or negative effects) may change in future, and adverse effects

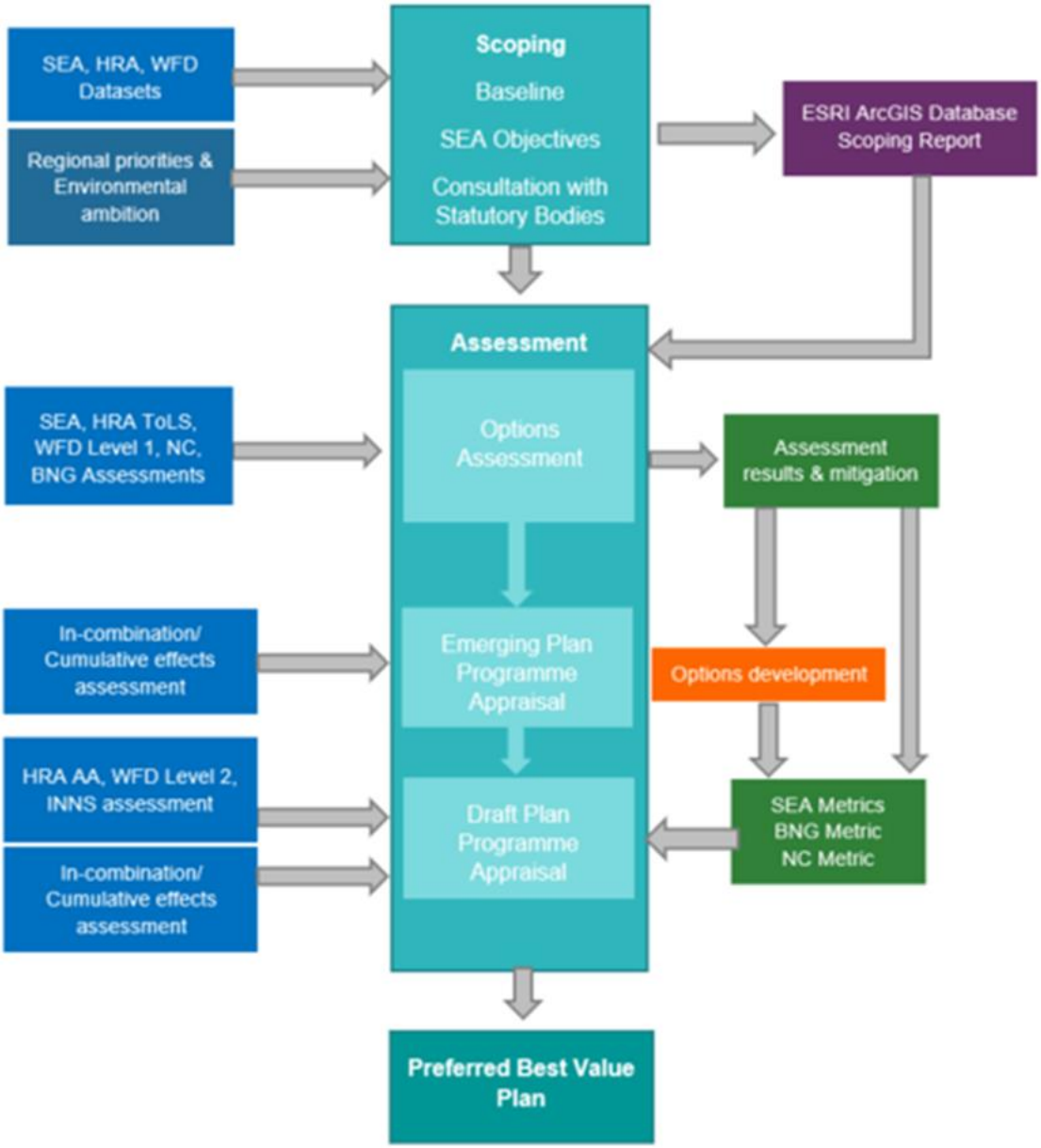
may be revised downwards as mitigation is further developed and confirmed. Any options taken forward in future for implementation would undergo further detailed review and site assessment outside of the SEA process, prior to any construction or other implementation works taking place. It should also be noted that the yellow 'neutral' score has been assigned this colour to reflect that there have been no identified likely impacts on a given SEA objective.

The results of the HRA, BNG, NCA, INNS and WFD assessments have fed into the SEA assessments for the biodiversity objectives, and the WFD assessments have informed the assessment for the SEA water topic. To determine the environmental effects of the options and alternatives programmes for WRMP24, the following tasks were undertaken:

- Options level environmental assessments for proposed supply and demand options for the draft WRMP24; and
- Programme level environmental appraisal of the draft SWW WRMP24 (preferred adaptive plan) and the alternative programmes including cumulative and in-combination effects.

Figure 0.**Figure 0.3** 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 0.3: Environmental Method Integration with Options Decision-Making and Plan Development



SEA Findings

A two-stage process was undertaken to determine the environmental effects of the options and preferred draft SWW WRMP24 (and alternatives). An options level SEA assessment was undertaken for each option included within the draft WRMP24.

During the draft WRMP24 development, work remained ongoing to refine the supply and demand options. New options were identified during this process and others removed when confirmed as unfeasible, as the environmental and engineering assessments were progressed in more detail. The full list of supply and demand options have been included in the draft WRMP24 at the time of writing in December 2022.Table 2.1

60 feasible options were included in the draft WRMP24, including 42 supply options, 15 demand options, two SROs and one new option. The 42 supply options and 15 demand options have

been assessed as part of the WRMP24 SEA process. The two SROs have undergone a separate environmental assessment process, with key findings noted in this Environmental Report. The new option (BNW17) has not been assessed, as information is not yet available, and this option may become an SRO and undergo a separate assessment. **Table 0.4** and **Table 0.5** list the 42 supply options and 15 demand reduction options which were identified and assessed within the SEA, based on the information available at the time of writing.

It is recognised that further updates and additional options are likely to be brought forward and assessed in future updates.

Table 0.4: Draft WRMP24 Supply Options

WRZ	Option Ref	Scheme Type	Option Name	Yield (Ml/d)
Bournemouth	BNW1	Redevelopment of existing sources with increased yields	Borehole development, existing borehole remedial works	1
Bournemouth	BNW3	Groundwater Sources	Wimborne transfer to Longham – licence change	4
Bournemouth	BNW6	Aquifer Recharge	Longham Aquifer Recharge	10
Bournemouth	BNW11	Water Transfer	Christchurch WWTW IPR2 Transfer to Longham Lakes	14
Colliford	COL2	Direct River Abstraction	Colliford PS Stage 2 – River Camel Abstraction	15
Colliford	COL3	Direct River Abstraction	Abstraction of Colliford compensation flows when making supply releases	2.3
Colliford	COL4	Direct River Abstraction	Abstraction of Siblyblack compensation flows when making supply releases	1.5
Colliford	COL5	Direct River Abstraction	Increase Wendron annual licence and de-couple from Stithians	1 - 2
Colliford	COL6	Direct River Abstraction	River Hayle abstraction	1 - 2
Colliford	COL9	New reservoir or development of existing source or mineral extraction workings	Lewsidden Pool	5.46
Colliford	COL11	New reservoir or development of existing source or mineral extraction workings	Hawk's Tor Pit	3
Colliford	COL12	Groundwater Sources	Stannon daily abstraction increase	4
Colliford	COL15	Increase WTW capacity to licence maximum	Restermol WTW	5
Colliford	COL18	Reintroduce more regular use of existing sources	Porth/Rialton	4
Colliford	COL19	Reintroduce more regular use of existing sources	Boswyn Stream/ Cargenwen Reservoir/ Carwynnen Stream	3
Colliford	COL20	Direct River Abstraction	River Fal new abstraction	25
Roadford	ROA2	Direct River Abstraction	River Erme	1

WRZ	Option Ref	Scheme Type	Option Name	Yield (Ml/d)
Roadford	ROA3	Direct River Abstraction	River Yealm	3
Roadford	ROA4	Direct River Abstraction	Abstraction of Roadford compensation flow at Gunnislake when making supply releases	3.7
Roadford	ROA6	New reservoir or development of existing source or mineral extraction workings	Upper Tamar Lake annual licensed	1
Roadford	ROA7	Increase WTW to licence maximum	Expansion of Northcombe WTW to 60Ml/d	10
Roadford	ROA8	Source optimisation – Reducing WTW minimum capabilities	Tottiford WTW – Reduce WTW minimum capacity	1
Roadford	ROA10	Source optimisation – Reducing WTW minimum capabilities	Avon WTW – Reduce WTW minimum capacity	1
Roadford	ROA11	Source optimisation – Reducing WTW minimum capabilities	Meldon WTW – Reduce WTW minimum capacity	1
Roadford	ROA12	Reintroduce more regular use of existing sources	Slade and Horedown WTW	2
Roadford	ROA13	Reintroduce more regular use of existing sources, water quality management at WTW	Duckaller and Vennbridge	0.4
Roadford	ROA14	New reservoir or development of existing source or mineral extraction workings	Raise Avon Dam	TBC
Roadford	ROA15	New reservoir or development of existing source or mineral extraction workings	Gatherley Phase 2	125
Roadford	ROA16	Increase WTW capacity to licence maximum	Littlehempston WTW	6
Wimbleball	WIM1	Direct River Abstraction	Abstraction of Wimbleball compensation flow at Northbridge when making supply releases	9
Wimbleball	WIM2	Groundwater Sources	Sidford borehole commissioning	1.5
Wimbleball	WIM4	Groundwater Sources	Wilmington springs annual abstraction increase	0.4
Wimbleball	WIM5	Reclaimed water, water reuse, effluent reuse	Indirect potable reuse – stream support for Dotton WTW	2
Wimbleball	WIM6	Increase WTW capacity to licence maximum	Increase Allers WTW capacity	4
Wimbleball	WIM7	Increase WTW capacity to licence maximum	Increase Pynes to licence limit 66.46Ml/d	6.5

WRZ	Option Ref	Scheme Type	Option Name	Yield (Ml/d)
Wimbleball	WIM8	Redevelopment of existing sources with increased yields (changes to system operation). Reintroduce more regular use of existing sources	Brampford Speke borehole	3.5
Wimbleball	WIM9	Redevelopment of existing sources with increased yields (changes to system operation). Reintroduce more regular use of existing sources	Stoke Canon borehole	4.5
Isles of Scilly	ISMY1	Groundwater sources	St Mary's new borehole (location 1)	0.1 – 0.15
Isles of Scilly	ISMY2	Groundwater sources	St Mary's new borehole (location 2)	0.1 – 0.15
Isles of Scilly	ISMY4	Redevelopment of existing sources with increased yields	St Mary's - Increase Existing desalination plant capacity	0.1 – 0.25
Isles of Scilly	ISB4	Redevelopment of existing sources with increased yields	Bryher - Increase Existing desalination plant capacity	0.1 – 0.2
Isles of Scilly	IST1	Groundwater sources	Tresco new borehole	0.03

Table 0.5: Draft WRMP24 Demand Options

WRZ	Option Ref	Scheme Type	Option Name	Yield (Ml/d)
SWW	HH_M_009	Watersmart	This option makes use of customer meter and other data to provide personalised bills and behavioural nudges (e.g. comparisons against local averages).	0
SWW	NHH_A_001	Business Efficiency Visits (BEV)	Visits to businesses including undertaking a water audit, advice and tailored retrofit of free water efficient devices to bathrooms and kitchens only (not wider process water). Business sectors are targeted based on high potential for water savings.	0.49
SWW	NHH_A_003	Business Efficiency Visits (HEV) – Targeted Business Leakage	BEV particularly targeted at leakage detection and fix. Targeted where high-water usage would indicate that leakage might be occurring.	0.16
SWW	NHH_A_004	Business Efficiency Visits (HEV) – Agriculture Leakage	This option specifically targets the agricultural sector and is delivered in partnership with a third party (e.g., FWAG South West, AHDB, NFU). Expert water audit is provided on farms including advice, improvements, and fixes/targets).	TBC
SWW	NHH_A_005	Business Efficiency Visit (BEV) – Targeted Large Business Leakage	This option provides targeted visits by process engineers to large scale businesses to look at how water use can be reduced on site. The output will be recommendations with indicative cost and efficiencies that could be achieved (solutions could include zero liquid discharge (ZLD), water reuse). This option would also consider any potential for the use of non PWS supplies.	0.04
SWW	NHH_A_007	Virtual Business Efficiency Visit (VBEV) - Water	Virtual business use assessment undertaken online with an online efficiency representative. The assessment provides advice, recommendations, and actions, and could	0.07

WRZ	Option Ref	Scheme Type	Option Name	Yield (Ml/d)
		Audits and Devices	include sending free water efficiency devices for self-install or a professional plumber visit (e.g., for leaky loo fix).	
SWW	NHH_E_001	Sector Specific Water Efficiency Advice	The development of a central website/customer engagement dashboard website to provide information on water efficiency campaigns and online tools for customers to engage with that provide water efficiency advice (e.g., water calculators - effectively acting as a self-audit) and wider resources. This could be extended to allow customers to login to their accounts to look at real time water use from Smart meters: advice would then be more tailored.	0.6
SWW	NHH_N_001	Rainwater Harvesting	This option would work with developers to provide rainwater harvesting systems to provide a non-potable supply for use within the new commercial properties. Water is collected from roof runoff and a sustainable drainage system is created. The collected water goes through a basic level of treatment. Rainwater harvesting is included in the development to meet planning conditions.	1.21
SWW	NHH_N_006	Reuse Treated Wastewater Effluent	Reuse treated wastewater effluent from industrial customers is used for supply to industrial customers. This reclaimed water could be used for industrial/commercial use rather than potable water.	0.62
SWW	HH_E_009	Efficiency visits and audit	Watersmart is rolled out with the SMART metering roll out. It is assumed it will be offered to all newly metered customers (e.g., 90% of households by 2050 in mid scenario).	TBC
SWW	HH_A_002	Efficiency visits and audit	Home Efficiency Visits (HEVs) are offered to metered customers, uptake % is set as the target goal by 2030 and assumes HEVs are offered until that target is reached. Assume each HEV visit achieves the average PCC water savings expected from HEVs. Even if some visits are unsuccessful in significantly improving efficiency, this is incorporated in the calculation as the PCC savings used are an average, i.e., some households will produce higher than the average PCC savings in contrast.	TBC
SWW	HH_A_003	Home Efficiency Visits (HEV) – Audit with Device - New Meter	Visits include undertaking a water audit, advice and tailored retrofits of free water efficient devices where required (e.g. leaky loo fix). HEV's are provided alongside the company's ongoing smart meter rollout.	TBC
SWW	HH_E_0013	School Visits	This option involves working in partnership with schools across the WCWR region to promote water efficiency. The aim is that education regarding water efficiency starts at an early age and therefore will result in long-term demand savings. This would be tailored for children for the different key stages. It would provide lesson plans and material to allow teachers to deliver water efficiency lessons, this would be provided to all schools. This would also be accompanied by a set number of school visits each year (targeted to areas of high water use or demography).	TBC
SWW	HH_E_017	Targeted Water Efficiency Programmes	A focused water efficiency programme at targeted locations across the WCWR area including advertising, education, and other outreach work.	TBC
SWW	Water Labelling Scenario	Water Labelling Scenario	Water labelling – with minimum standards. SWW have assumed a 30% saving by 2050 as a result of water labelling.	<1Ml/d

The key findings of the SEA include the results of the environmental assessments on a programme-wide scale for the preferred draft SWW WRMP24 and alternatives. The plans assessed as part of the draft WRMP24 development were:

- Best Value Plan (preferred plan) – using best value applied to SWW modelling outputs;
- Least Cost Plan (alternative) – using SWW cost-based modelling outputs only; and
- Worst Case Plan (alternative) – assuming high climate change and environmental factors impact supply water available for use (WAFU) and demand.

The below tables (**Table 0.6** and **Table 0.7**) show the SEA summary assessment for each of the WRMP options that make up the preferred plan (Best Value Plan). Commentary on the findings of this assessment can be found in the text below the tables.

Two alternative plans were also assessed, Least Cost and Worst Case, these however, were not selected by SWW to form the preferred plan. The sections for these alternative plans below are a summary of the key SEA assessment findings, where the full findings can be found within the SEA Environmental Report (**Section 10.3 and Section 10.4**). Further alternative plans have been under development by SWW, and these will be assessed as additional alternatives when available.

It should be noted that options for the Isles of Scilly WRZ were not included as part of these plans, and therefore only include options from the Bournemouth, Colliford, Roadford and Wimbleball WRZs as well as demand options, which have been allocated to each WRZ respectively.

Table 0.6: Best Value Plan short term (construction) SEA summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	ST	-	-	0	0	0	0	-	-	-	0	0	-	0	0	-	0
BNW 3	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BNW 6	ST	-	-	-	-	-	0	-	-	-	0	0	0	-	++	-	-	0
BNW 7	ST	SRO and not assessed under the SEA framework.															
BNW 8	ST	SRO and not assessed under the SEA framework.															
BNW 11	ST	--	--	-	-	-	0	-	-	--	0	--	--	-	+	-	-	-
COL 2	ST	-	-	-	-	-	0	0	0	--	0	0	-	-	+	-	-	-
COL 9	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	0	-
COL 11	ST	-	--	-	-	-	0	0	0	--	0	-	-	-		-	-	-
COL 15	ST	0	0	0	0	-	-	0	-	--	0	-	-	-	+	-	-	0
ROA 7	ST	-	-	-	-	0	0	-	-	-	0	0	-	-	+	0	-	-
ROA 10	ST	-	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
ROA 15	ST	-	-	--	-	-	0	-	-	--	-	-	-	-	++ +	-	--	-
ROA 16	ST	-	0	0	0	0	0	0	0	-	0	0	-	-	+	0	-	0
WIM 2	ST	0	-	-	-	0	0	-	-	-	0	0	0	-	+	-	-	0
WIM 5	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	-	--
WIM 7	ST	-	0	0	0	-	0	-	-	--	0	-	-	-	+	0	-	0

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
WIM 8	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIM 9	ST	0	0	0	0	0	0	0	-	-	0	-	0	+	0	-	0
NHH_A_001	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
NHH_A_007	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NHH_E_001	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 0.7: Best Value Plan long-term (operation) SEA summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	LT	--	-	0	-	0	- +	0	0	-	+	0	0	0	0	-	0
BNW 3	LT	0	0	0	0	0	+	0	0	0	+	0	0	0	0	0	0
BNW 6	LT	- +	- +	--	-	- +	++	0	-	-	+	0	0	+	-	-	-
BNW 7	LT	SRO and not assessed under the SEA framework.															
BNW 8	LT	SRO and not assessed under the SEA framework.															
BNW 11	LT	0	- +	0	0	- +	++	0	-	-	- +	0	0	0	0	-	0
COL 2	LT	--	--	-	--	-	++	0	0	--	-	0	0	+	-	-	0
COL 9	LT	-	-	-	-	-	+	0	0	-	0	0	0	+	0	0	0
COL 11	LT	-	-	-	-	+	+	0	0	-	0	-	0	0	0	0	0
COL 15	LT	-	-	0	--	0	+	0	0	-	+	0	-	+	-	-	0
ROA 7	LT	0	-	0	-	0	+	0	0	--	- +	0	0	+	0	-	0
ROA 10	LT	0	-	0	+	- +	+	0	- +	0	- +	0	0	0	0	0	0
ROA 15	LT	0	-	--	--	-	+++	-	0	-	- +	0	-	+	+	--	0
ROA 16	LT	0	0	0	0	0	+	0	0	-	- +	0	0	0	0	-	0
WIM 2	LT	0	-	0	-	0	- +	0	0	-	-	0	0	+	0	-	0
WIM 5	LT	0	+	0	-	0	- +	0	0	-	+	0	0	-	-	0	0

Option Ref	ST / LT	SEA Topics																	
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
WIM 7	LT	0	-	0	-	0	- +	0	0	-	- +	0	0	+	-	-	0
WIM 8	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
WIM 9	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
NHH_A_001	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	+
NHH_A_007	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
NHH_E_001	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0

Best Value Plan short-term (construction) effects

No potential major negative short-term (construction) effects were identified for the Best Value Plan (**see Table 0.6**.

With the plan, option ROA15 was identified as having potential major positive short-term effects for objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing".* These effects were attributed to the scale of construction works likely leading to a temporary and major beneficial impact on the economy of the local community, as there is opportunity to create jobs and source from local suppliers, with a very high anticipated upfront cost across a planned construction period of five years.

Option BNW6 was identified to have potential for moderate positive short-term effects in relation to the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". These effects were attributed to the significant capital cost predicted, leading to benefits to the local economy during construction including job creation and working with local suppliers for materials.

Potential minor positive and minor negative short-term effects were identified for BNW11, COL2, COL9, COL15, ROA7, ROA16, WIM2, WIM5 and WIM7 in relation to the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". These positives effects are attributed to very substantial upfront capex costs, leading to potential job creation and local supply chain opportunities. Potential minor negative effects are associated with temporary increases in construction activity during this phase, with effects being comprised of dust and noise emissions potentially disturbing local residents along with increased traffic and congestion. Option WIM9 is the only option within the Best Value Plan to have only a minor positive short-term effect on the same objective (8.1), due to the potential creation of jobs during the construction phase benefitting the local economy. The remaining options have all been identified as having neutral short-term effects.

Option BNW11 was identified for moderate negative short-term effects for the biodiversity objective (1.1) "*protect and enhance designated and non-designated ecological sites*" which was attributed to outfall points being constructed within designated and non-designated sites. Excluding options BNW3, COL15, WIM2, WIM8, WIM9 and the three demand options of DemB-NHH1, DemB-NHH2 and DemB-NHH3, which were all assessed as neutral, the remaining options were assessed as having potential for minor negative short-term effects against this objective. These effects were attributed to a range of causes including dust and noise pollution, arising from construction activities and construction traffic associated with the options.

Both option BNW11 and COL11 were identified for moderate negative short-term effects for the biodiversity objective (1.2) "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". These potential negative effects are due to the anticipated loss of habitats from clearance for construction of the options. Minor negative short-term effects were identified for options BNW1, BNW6, COL2, COL9, ROA7, ROA15, WIM2 and WIM5 for the same objective. Causes of this effect varied between options, with dust, noise and vibration resulting in potential impacts on priority habitat, and excavation of land to construct pipelines being within 500m of priority habitat amongst the potential impacts of the plan.

ROA15 was identified as having potential for moderate short-term negative effects for the biodiversity objective (1.3) *"reduce the spread or presence of INNS"* through construction activities such as sharing equipment. Minor negative short-term effects were also identified for

the biodiversity objective (1.3) in options BNW6, BNW11, COL2, COL9, COL11, ROA7, WIM2 and WIM5 due to a range of causes including the potential sharing of equipment as well as the movement of excavated material and works on new connections and discharge points.

Potential moderate negative short-term effects have been identified for BNW11, COL2, COL11, COL15, ROA15 and WIM7 for the climate objective (5.1) to "*reduce embodied carbon emissions*", largely due to the total embodied carbon from construction which is estimated to be over 2,000 tCO_2 equivalent for each option.

Potential moderate negative short-term effects were identified for BNW11 in relation to the historic environment objective (6) to "*conserve, protect and enhance the historic environment, including archaeology*" regarding the potential for this option to affect the setting of, or prevent access to listed buildings and scheduled monuments, as well as the potential effect on below-ground remains.

BNW11, COL9 and WIM5 have the potential for moderate negative short-term effects in relation to the landscape objective (7) to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" regarding potential effects on visual amenity. These identified effects relate to the requirement for excavation-related site works for the three options.

The material assets objective (9.1) *"minimise resource use and waste production"* was identified for moderate negative short-term effects against ROA15, due to the construction works requiring significant amounts of materials and energy demand. Option WIM5 was also identified as having potential moderate negative short-term effects for the material assets objective (9.2) *"avoid negative effects on built assets and infrastructure".* This is due to the likely requirement of excavation and the proposed works intersecting major and minor roads.

Minor negative short-term effects were identified for the water objective (2.1) *"protect and enhance the quality of the water environment and water resources"* for options BNW6, BNW11, COL2, COL9, COL11, ROA7, ROA15, WIM2 and WIM5. The potential impacts were identified due to a variety of causes including potential intercepts with minor watercourses by transfer pipelines, which could lead to potential deterioration of water quality due to contamination, and water arising from construction activity. These options being located within Groundwater Source Protection Zones 2 and 3, Drinking Water Protected Areas and Nitrate Vulnerable Zones were also factors in the assessment of water objective 2.1.

Options BNW6, BNW11, COL2, COL9, COL11, COL15, ROA15, WIM5 and WIM7 were all identified as having potential minor negative short-term effects for the water objective (2.2) *"increase resilience and reduce flood risk"* due to options being located within Flood Zone 2 and Flood Zone 3, with areas being potentially affected by flooding during the construction phase particularly during periods of high rainfall.

For the water objective (2.3) *"deliver reliable and resilient water supplies"* all Best Value Plan options were identified as neutral for short-term effects with the exception of COL15 which was identified as a minor negative effect. This was due to the option potentially requiring a reduction in abstraction during construction leading to potentially adverse effects upon water resilience during periods of drought.

Within the Best Value Plan options for the soil objective (3) *"protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance"* there was a mix of short-term effects with BNW1, BNW6, BNW11, COL9, ROA7, ROA15, WIM2, WIM5 and WIM7 identified as having minor negative short-term effects and the remaining options assessed as neutral. Minor negative short-term effects were identified due to a range of factors including option sites being partly in Grade 2 classified agricultural land (very

good quality) and soils requiring excavation. In addition, there is direct encroachment of pipeline construction within Historic Landfill Sites, potentially resulting in release of contaminants from surface run off into surface waterbodies.

The air objective (4) *"reduce and minimise air emissions"* was identified as having minor negative short-term effects on the following options, BNW1, BNW6, BNW11, COL9, ROA7, ROA15, WIM2, WIM5, WIM7, COL15 and WIM9. These effects were identified due to construction-related activities including construction of pipelines and new infrastructure, alongside construction traffic leading to potentially minor negative short-term effects on air quality.

Option ROA15 was identified as having potential minor negative short-term effects on the climate objective (5.2) *"reduce vulnerability to climate change risks and hazards"* with all other options being assessed as neutral. This option was assessed as a potential minor short-term negative effect due to construction works potentially exacerbating flooding as a result of the new reservoir or development of existing source.

Minor negative short-term effects were identified for the population and health objective (8.2) *"maintain and enhance tourism"* for a range of options including BNW6, BNW11, COL2, COL9, COL11, COL15, ROA15, WIM2 and WIM5. The listed options were assessed as potential minor negative short-term effects due to recreational land and greenspace sites which are likely to be temporarily disrupted during construction. Further effects may be caused through increased construction traffic impacting access to tourism and recreational activities in the vicinity of these options.

Best Value Plan long-term (operational) effects

There were no major negative long-term (operational) effects identified for the Best Value Plan. (See **Table 0.7** above.)

Option ROA15 was identified as having a major positive long-term effect for the water objective (2.3) *"deliver reliable and resilient water supplies"*. This was due to the major beneficial effect to the resilience of water supplies for the area as a result of the option.

For the same water objective (2.3), options BNW6, BNW11 and COL2 were identified as having potential moderate positive long-term effects, due to an anticipated significant increase in water yield once operational. All remaining options within the Best Value Plan were assessed as having minor positive long-term effects due to water resilience as a result of increased water abstraction and transfer, as well as a reduction in predicted water losses. Options BNW1, WIM2, WIM5, WIM8 and WIM9 were identified for both minor positive and minor negative long-term effects for the same objective. The minor long-term negative effects were identified due to potential over-abstraction of water sources leading to decreased long-term resilience.

Option BNW6 was the only option with a potential minor positive long-term effect identified for the biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* this was due to the recharging of aquifers potentially resulting in minor positive effects for GWDTEs near the option by providing minor increases in groundwater levels.

Potential minor positive long-term effects were identified for options BNW6, BNW11, WIM5, WIM8 and WIM9 for the biodiversity objective (1.2) *"protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity"*. The assessments of these were concluded due to a range of factors including potential increases in groundwater and discharge back into rivers, enhancing the conditions of GWDTE and resilience of water-

dependent habitats particularly during drier seasons. As well as increased surface water flows benefitting priority habitat within 500m of waterbodies from the options.

Potential minor positive long-term effects were identified for water objective (2.1) *"protect and enhance the quality of the water environment and water resources"* for options ROA10, WIM8, WIM9, DemB-NHH1, DemB-NHH2 and DemB-NHH3. These effects were identified due to a range of causes including lower levels of abstraction, leading to increases in resilience and water resourcing. This is anticipated to be due to a reduction in water loss within individual businesses across multiple sectors.

Potential minor positive long-term effects were identified for the water objective (2.2) *"increase resilience and reduce flood risk"* for options BNW6, BNW11, COL11 and ROA10, due to anticipated improvements in flood risk management and a larger capacity to store flood waters during storm events.

Option ROA10 was the only option to be identified as having the potential for minor positive long-term effect on air objective (4) *"reduce and minimise air emissions"*. This was due to the reviewing of efficiencies within equipment and infrastructure, as part of the source optimization. Therefore, resulting in a reduction in air emissions across the option.

Within the Best Value Plan, 13 options were identified as having potential for minor positive long-term effects for the climate objective (5.2) *"reduce vulnerability to climate change risks and hazards",* with seven of those options also being identified for potential minor negative long-term effects. The minor positive long-term effects were identified due to an expected increase in river flow, contributing to reduced drought-related pressures, whilst reducing the risk of flooding from surface water and increased water storage capacity. The minor negative long-term effects were identified due to a range of factors including increased abstraction potentially depleting groundwater levels, reduced water levels in rivers and reservoirs and the degradation of water quality.

Minor positive long-term effects were identified for options BNW6, COL2, COL9, COL15, ROA7, ROA15, WIM2, WIM8. WIM9, DemB-NHH1, DemB-NHH2 and DemB-NHH3 for the population and health objective (8.1) *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"*. This was due to high ongoing opex costs of operation, which may involve the employment of local people to maintain options. The population and human health objective (8.2) *"maintain and enhance tourism"* only had option ROA15 with minor positive long-term effects due to the increase in water within the reservoir during operation being beneficial for recreational activities such as water sports.

A minor positive long-term effect was identified for the material assets objective (9.2*) "avoid negative effects on built assets and infrastructure"* with the demand option DemB-NHH1 potentially reducing the need for maintenance and improving operational efficiency of the asset.

Potential moderate negative long-term effects were identified for the biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* for options BNW1 and COL2. This is due to the potential effects that increased abstraction may have on groundwater levels as well as the current location of discharge being unknown, resulting in adverse effects not being able to be ruled out for option BNW1. In addition, hydrological connections to designated sites for option COL2 means there is potential for effects through pollution and changes in water levels.

COL2 was also identified for moderate negative long-term effects for the biodiversity objective (1.2) *"protect and conserve biodiversity, including priority species, vulnerable habitats and habitat connectivity"* due to the additional abstraction of 15Ml/d from the River Camel SAC,

which is a classified GWDTE. This reduction in water flow therefore has the potential for detrimental effects on the designated site.

Moderate negative long-term effects were identified for BNW6 and ROA15 in relation to biodiversity objective (1.3) *"reduce the spread or presence of INNS"* due to the transfer of untreated water from Matchams site to Longham for BNW6. ROA15 was identified as having potential for a moderate negative long-term effect due to reduced water levels on the River Tamar and Lyd, as well as increased water levels at Roadford Reservoir leading to a change in the suitability for any INNS present. This could result in the spread of INNS to hydrologically connected sites.

Potential moderate negative long-term effects were identified for COL2, COL15 and ROA15 for the water objective (2.1*) "protect and enhance the quality of the water environment and water resources"* due to increased abstraction resulting in potentially long-term deterioration of the water quality caused by reduced flows.

For the climate objective (5.1) *"reduce embodied and operational carbon emissions"* moderate negative effects were identified for options COL2 and ROA7 due to the carbon emissions generated by the options in the operational phase.

Potential moderate negative effects were identified for option ROA15 for the material assets objective (9.1) *"minimise resource use and waste production"* due to the moderate value for ongoing yearly opex and operational carbon emissions. This suggests that moderate amounts of energy will be required for new abstraction points and power to run the new pumping station.

Minor negative long-term effects were identified for options BNW6, BNW11, COL2, COL9, ROA10, ROA15 for the water objective (2.2) *"increase resilience and reduce flood risk"* due to increased discharge of water potentially increasing flood risk within areas of Flood Zone 2 and 3 during periods of high rainfall, as well as increases in impermeable surfaces as a result of the new small-scale assets.

A potential minor negative short-term effect was identified for ROA15 for the soil objective (3) *"protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance"* as a result of potential permanent loss of soils within Grade 3 agricultural land (good to moderate).

The air objective (4) *"reduce and minimise air emissions"* was identified as having minor negative long-term effects for BNW6, BNW11 and ROA10 due to increased emissions from higher levels of pumping and treatment during the operational phase of the options.

Option COL11 was the only option within the Best Value Plan to be identified for potential minor negative long-term effects for the historic environment objective (6) *"conserve, protect and enhance the historic environment, including archaeology"* with all other options identified as having neutral long-term effects.

The landscape objective (7*) "conserve, protect and enhance landscape, townscape and seascape character and visual amenity"* resulted in neutral long-term effects with the exceptions of COL15 and ROA15, which were assessed as having potentially minor negative long-term effects. This was due to potential increases in operational noise emissions from increased abstraction and the likely permanent loss of greenfield land as well as the options being located within a Historic National Landscape Character Area respectively.

Option WIM5 was identified to have minor negative long-term effects for the population and health objective (8.1) due to the pumping of effluent into the River Otter. This has the potential

for negative impacts within the local community, which may deter people from using the river for recreational activities.

For the population and human health objective (8.2), minor negative long-term effects were identified for options BNW6, COL2, COL15 and WIM5 due to potential reduction in flows from increased abstraction, with effects particularly likely during periods of drought.

Option BNW6 was identified as having a potential minor long-term negative effect for the material assets objective (9.2), due to the recharging of an aquifer potentially resulting in soil heave which may lead to damage of built infrastructure such as roads with minor negative effects to receptors possible. All other options are predicted as having neutral effects.

Least Cost Plan

The Least Cost Plan is comprised of options from the Bournemouth, Colliford, Roadford and Wimbleball WRZs. This plan was not selected by SWW as the preferred WRMP24 plan. Summary findings from the SEA assessment of this alternative plan include:

Short-term construction effects:

- There were no major positive short-term effects identified from the options for the Least Cost Plan.
- No major negative short-term effects were highlighted with the options in the Least Cost Plan.
- Moderate negative short-term effects were identified as a result of option BNW11, associated with objective (5.1) "*reduce embodied and operational carbon emissions*", this is due to the embodied carbon emissions being calculated at 4,931 tCO_2 equivalent for the construction phase.
- A range of other short-term operational effects have also been identified due to the variety of construction works proposed by the options.
- Mixed moderate positive and minor negative short-term effects were identified as a result of BNW6, associated with population objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*", due to construction works generating employment within the Bournemouth region, as well as potential for negative impacts from construction related noise and dust.

Long-term operational effects:

- No major positive effects were identified with the long-term phase of the options within the Least Cost Plan, similarly no major negative operational effects were associated with the options.
- Minor positive long-term effects were identified for a range of options and for a range of topics within the Least Cost Plan. These were mainly associated with the water objective (2.3) of "*deliver reliable and resilient water supplies*", the population and health objective (8.1) of "*maintain and enhance the health and wellbeing of the local community including economic and social wellbeing*", and climate objective (5.2) "*reduce vulnerability to climate change risks and hazards*".
- Moderate negative long-term effects were identified for COL3, COL4, COL5, ROA4 and WIM1 under the water objective (2.3) of "*deliver reliable and resilient water supplies"* due to increased abstraction associated with these options which has the potential to lead to a significant permanent deterioration on WFD status.

- A range of other long-term operational effects have also been identified due to the variety of operations proposed by the options.

Worst Case Plan

The Worst Case alternative plan is comprised of options from the Bournemouth, Colliford, Roadford and Wimbleball WRZs. This plan was not selected by SWW as the preferred WRMP24 plan. Summary findings from the SEA assessment of the plan include:

Short-term construction effects:

- One major positive short-term effect was identified from the options within the Worst Case Plan for option ROA15 and one moderate positive short-term effect for option BNW6, under the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". Various options are identified as having the potential for mixed minor positive and minor negative effects on this objective.
- One major negative short-term effect was highlighted from the options within the Worst Case Plan, this relates to option ROA2 in regard to the climatic factors objective (5.1) of "*reduce embodied and operational carbon emissions*" due to the significant amount of embodied carbon associated with construction of the option.
- Option COL9 was assessed has having the potential for moderate short-term effects under the landscape objective of "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" due to the option being located within the Cornwall AONB and the requirement for excavation works to take place, with disruption to residential views and landscape setting.
- Option BNW11 has the potential for moderate negative impact on five SEA Objectives with potential for moderate negative effects including objectives 1.1, 1.2, 5.1, 6.1 and 7.1 due to the location and extent of construction activities required for these options.
- A range of other short-term negative and positive construction effects have also been identified as a result of the variety of construction works proposed by the options.

Long-term operational effects:

- Major positive long-term effects were identified, both associated with option ROA15, in regard to the water objective (2.3) "*deliver reliable and resilient water supplies*" and the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*".
- Moderate positive long-term effects were identified under the water objective (2.3) "*deliver reliable and resilient water supplies*" for options BNW6, BNW11 and COL2 due to potential improvements in water supply resilience and increased abstraction yields.
- No major negative long-term effects were identified within the options of the Worst Case plan.
- A range of other long-term operational effects have also been identified due to the variety of operations proposed by the options.

Cumulative Effects

Intra cumulative effects (the compounded effect of two or more options together on a certain feature/asset) and inter cumulative effects (the effect of the options in combination with local planning allocations and major projects) of the WRMP24 with other relevant plans, programmes and projects have been considered as part of the SEA process.

Intra-cumulative effects:

During the construction phase of the preferred plan (Best Value Plan) , eight of the SEA Objectives are anticipated to have a negative short-term effect. This is due to spatial disparity with a number of options being in close proximity to one another and scheduling, with construction works anticipated to commence across similar timeframes for the following options: WIM2 and WIM5, COL11 and COL15, and WIM7, WIM8 and WIM9. This Plan also presents a number of clustered options in each of the WRZ which present the risk of cumulative effects on designated sites, and environmental assets as well as an increased risk of disturbance to local communities. These negative effects would be predominantly experienced across the biodiversity, water, soils, air, climate change population and health and material asset SEA Objectives. Ecological sites such as the River Camel SAC and areas of priority habitat are potentially at risk of cumulative effects as a result of degradation from construction activities A major negative effect associated with SEA Objective 5.1 has been identified as part of this plan due to the increased embodied carbon emissions associated with construction activities. During construction there is the potential for major positive effects associated with population and health SEA Objectives. These are likely to arise due to the economy benefits during the construction phase.

Long-term negative operational effects are likely to be experienced across 11 SEA Objectives, with specific reference to water and climate, due to the options resulting in an increase in operational carbon emissions. There is anticipated to be cumulative effects experienced several waterbodies, these include Lower River Fowey, Stour (Lower) and Permian Aquifers in Central Devon (groundwater), as a result of over-abstraction and changes to flow and water quality.

Options BNW1, BNW3, BNW7, COL9, ROA10 and ROA16 are geographically diverse and therefore present limited cumulative effects.

Inter cumulative effects: Cumulative (Inter) effects of the WRMP24 with other relevant plans, programmes and projects have been considered against the SEA assessment methodology. These include the following:

- SWW Drought Plan (2022)[12];
- SWW and Bournemouth Water Final Water Resource Management Plan (2019)[13];
- Neighbouring water companies' WRMP and Drought Plans:
- Wessex Drought Plan;
- Southern Water Drought Plan;
- National Policy Statements[14] and National / Regional Infrastructure Plans[15];
- Canal & River Trust Management Plans[16];
- Relevant Local Development Frameworks;

[12] South West Water (2022) *South West Drought Plan.* Available at: https://www.southwestwater.co.uk/environment/a-precious-resource/drought-plan/

[13] South West Water (2019) *SWW and Bournemouth water final water resource management plan*. Available at: sww-bw-wrmp19---finalplan_aug2019.pdf (southwestwater.co.uk)

[14] Planning Inspectorate *National Policy Statements*. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/national-policy-statements/

[15] Planning Inspectorate *National Infrastructure Planning* Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-https:/infrastructure.planninginspectorate.gov.uk/projects/advice/national-policy-statements/

[16] Canal and River Trust (2020) *Ways to Save Water*. Available at: https://canalrivertrust.org.uk/specialist-teams/managing-our-water/ways-to-save-water

- Environment Agency Drought Plan[17]; and
- Relevant Major projects.

No inter cumulative effects have been identified as there are no interactions with the implementation and operation of the WRMP24, however this will be reviewed as the options are further developed.

Mitigation and Monitoring

Mitigation measures and enhancement opportunities are identified in the individual option assessments and in the cumulative effects assessment. HRA AAs, WFD Level 2 Assessments and INNS Assessments were required for a number of the selected options and specific mitigation was developed as part of these processes and included in the detailed SEA options assessment matrices.

Example high-level, plan-wide mitigation measures per SEA topic include:

- Biodiversity, Flora and Fauna: Habitat would be reinstated on completion of development, or if unavoidable damage or loss, compensatory habitat would be considered in line with BNG requirements;
- Water: Best practice construction methods would be implemented to minimise water deterioration (e.g., dust suppression and pollution control measures);
- Soils: Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils;
- Air: Best practice mitigation measures would be implemented to mitigate potential air quality effects arising from construction works and increased vehicular movement. These mitigation measures would also include dust suppression and pollution control measures;
- Climatic Factors: The use of substitute materials with lower embodied carbon and use of renewables to power new facilities would be considered;
- Population and Human Health: Where applicable, route realignments would be amended or trenchless techniques used to avoid direct impacts on property and community assets;
- Historic Environment: Consultation with statutory bodies would be undertaken to ensure impacts to heritage assets would be avoided or mitigated appropriately according to statutory requirements;
- Landscape: Where possible, new infrastructure would be located close to existing above ground-built assets, as this could lower the long-term impacts on visual amenity; and
- Material Assets: Where possible, seek opportunity to implement sustainable design measures (design to reduce footprint, selection of materials) and reuse excavated material to reduce the impact.

Monitoring will be carried out by SWW as part of their WRMP processes. Monitoring will help ensure that the identified SEA objectives are being achieved and allows for early identification of unforeseen adverse effects and thus for appropriate remedial action to be taken. Monitoring will be an important requirement to measure performance and ensure the WRMP24 is being successfully implemented. Department for Communities and Local Government (DCLG) SEA

[17] Environment Agency (2017) *Devon and Cornwall Area Drought Plan*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1107711/Devon_and_Cornwall_drought_plan_2017_withdrawn.pdf *[note withdrawn Sept 2022, however new version not yet released].*

guidance[18] states that it is inappropriate to monitor everything, and monitoring proposals should be focused on the following areas:

- Identifying potential breaches of international, national, or local legislation, recognised guidelines, or standards.
- Significant environmental effects 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.

Consultation and Next Steps

The SEA Consultation

The Environmental Report has been issued for a three month consultation period from February to May 2023 to the three statutory bodies: the EA, Natural England, and Historic England, as well as being made available to wider stakeholders.

SWW welcomes your views on the SEA Environmental Report on the following key questions:

- **Do you have any comments on the effects identified in the SEA?**
- **Do you have any comments on the proposed mitigation measures?**
- **Do you have any comments on the assessment of the preferred plan (Best Value Plan)?**

Following the Environmental Report consultation period, all consultation responses will be carefully reviewed and tabulated, and taken into account as far as possible. Any significant alterations to the SWW draft WRMP24 as a result of the consultation will be assessed in terms of their environmental implications and influence on the revision of the WRMP24. The final SEA Environmental Report will be amended as necessary to reflect any changes.

Next Steps

Following the consultation period, a consultation log of responses will be produced and will record the comments received from the Statutory Consultees and other stakeholders 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 draft WRMP24 is further developed the SEA will be updated to reflect the selected options and potential in-combination effects. The Environmental Report will be updated to take into account any changes between the draft WRMP24 as it develops into the final preferred Plan. Alongside this, the HRA AA, WFD Level 2 assessments, BNG, NCA and INNS risk assessments will be updated to reflect changes to WRMP24 options, and the results used to inform the plan development and SEA.

Following adoption of the SWW WRMP24, a Post-Adoption Statement will be produced which outlines how the SEA process has influenced the development of the WRMP, how consultation comments were taken into consideration and how the WRMP24 will be monitored. This summary will provide enough information to make it clear how the SWW WRMP24 was influenced as a result of the SEA process and consultation.

[18] DCLG (2005) A Practical Guide to the Strategic Environmental Assessment Directive. Available at: https://www.gov.uk/government/publications/strategic-environmental-assessment-directive-guidance Date accessed: 26/09/22

Monitoring of the SEA process will be carried out by SWW when the WRMP24 is implemented. Monitoring of the WRMP24 will be incorporated with SWW's annual monitoring processes to help ensure positive sustainability outcomes for the WRMP24.

Based on the work that Mott MacDonald has undertaken, we are comfortable that we have carried out the SEA in accordance with the SEA regulations and guidance.

1 Introduction

1.1 Introduction

1.1.1 Water companies have a statutory obligation to produce a Water Resources Management Plan (WRMP), which sets out how a company intends to maintain the balance between supply and demand for water over a minimum 25-year period. New WRMPs are prepared every five years and SWW is due to publish its next WRMP in 2024. In the development of a WRMP, companies must follow the Water Resource Planning Guidelines[19] ('Guidelines') produced by the Environment Agency, Natural Resources Wales and Ofwat. WRMPs should ensure a secure and sustainable supply of water and focus on efficiently delivering the outcomes that customers want, while reflecting the value that society places on the environment. The Guidelines state that in developing a WRMP in England and Wales, water companies should screen for a Strategic Environmental Assessment (SEA) and carry out a full SEA if required, including scoping the contents of the SEA.

1.1.2 A screening exercise determined that an SEA is required for the South West Water (SWW) WRMP 2024 ('WRMP24') under the *Environmental Assessment of Plans and Programmes Regulations 2004* ('SEA Regulations')[20], which require an assessment of the effects of certain plans and programmes on the environment.

1.1.3 The SWW WRMP24 SEA has been undertaken in the context of the regional planning currently being carried out. SWW falls under the WCWR Draft Regional Plan, which has been reviewed as part of this Environmental Report to ensure the proposed approach to undertaking the SEA aligns with the regional plan. In the WCWR Draft Regional Plan there are Strategic Resource Options (SROs) which are significant strategic options spanning across water companies. The SWW area includes two SROs which are considered in this Environmental Report and may form part of the final WRMP24.

1.1.4 This report is the WRMP24 SEA Environmental Report and presents the results of the SEA assessment undertaken on the options within the WRMP (**Annex 6**: **Appendices L, M, N, O, P, Q**). Additional environmental assessments have been undertaken and the findings incorporated into the SEA, including HRA, WFD Assessment, NCA, BNG and INNS. These studies are presented in the respective technical appendices of this Environmental Report (**Annex 2: Appendix H; Annex 3: Appendix I; Annex 4: Appendix J; and Annex 5: Appendix K**). The environmental assessments have been used to support the development of the draft WRMP.

1.2 The SEA Process

1.2.1 An SEA is required for the SWW WRMP24 under the SEA Regulations. The SEA works to inform the decision-making process through the identification and assessment of significant and cumulative effects that 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.

1.2.2 According to the SEA Regulations Part 2 (5):

[19] EA, NRW and Ofwat (2022) *Water Resources Planning Guideline*. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

[20] The SEA Regulations were transposed into United Kingdom (UK) law from the European Union Directive 2001/42/EC, more commonly known as the SEA Directive. The SEA Regulations remain UK law following the UK's exit from the EU.

'The responsible authority shall carry out, or secure the carrying out of, an environmental assessment, in accordance with Part 3 of these Regulations, during the preparation of that plan or programme and before its adoption or submission to the legislative procedure'.

1.2.3 Schedule 2 (6) confirms that the list of topics to be considered includes:

'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, on issues such as—

a. *biodiversity;*
b. *population;*
c. *human health;*
d. *fauna;*
e. *flora;*
f. *soil;*
g. *water;*
h. *air;*
i. *climatic factors;*
j. *material assets;*
k. *cultural heritage, including architectural and archaeological heritage;*
l. *landscape; and*
m. *the inter-relationship between the issues referred to in sub-paragraph (a) to (i).*

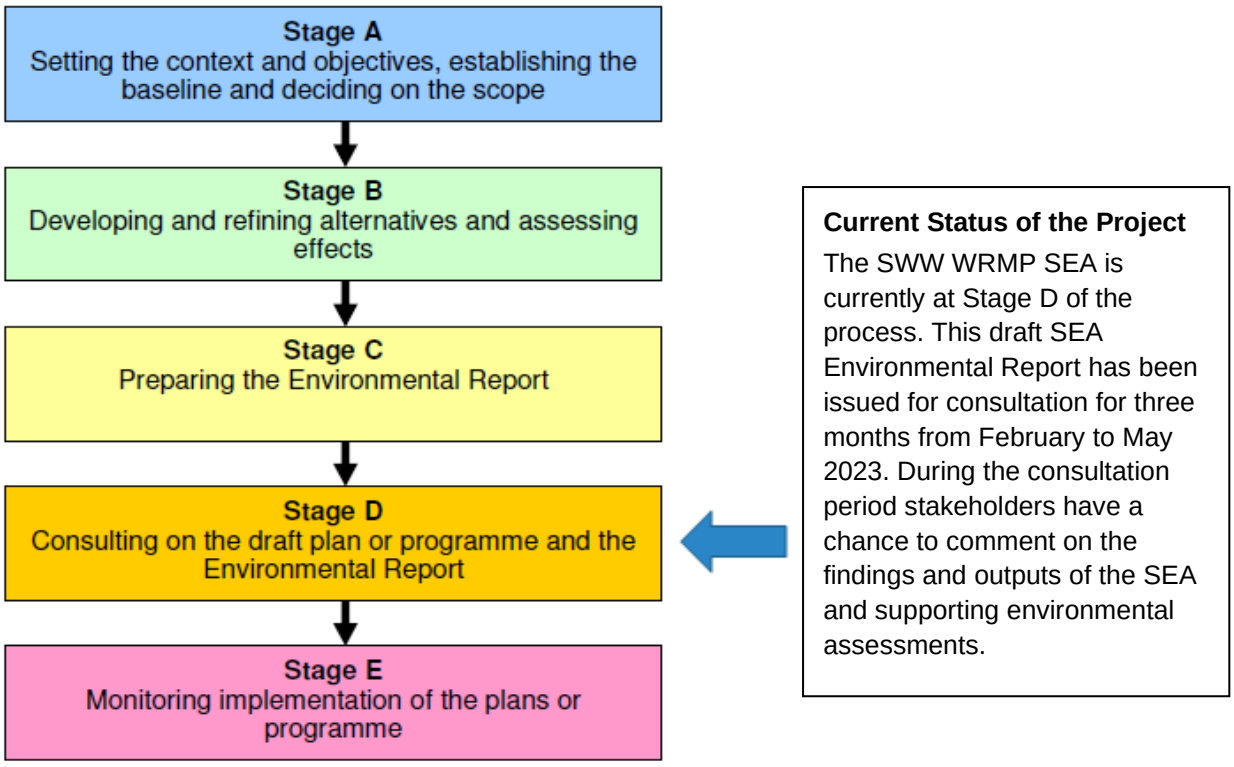
1.2.4 The SEA process is split into five different stages detailed in **Figure 1.1** below. **Annex 1: Appendix A** presents the different tasks involved in each of the SEA Stages.

1.2.5 The SEA process follows current and emerging guidance on the application of SEA within water resource planning including incorporating best practice within the proposed approach. The current and emerging guidance documents include:

- Water Resources Planning Guidelines, 2022, Environment Agency, Natural Resources Wales and Ofwat[21];
- Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans, 2021, UK Water Industry Research;
- Strategic Environmental Assessment: Core Objective Identification, 2020, All Company Working Group;
- Best practice topic guidance on SEA and biodiversity, climate and heritage from Natural England, the Environment Agency and Historic England;
- Water Resources Planning Guideline Supplementary Guidance – Environment and society in decision-making (England), 2021, Environment Agency; and
- A Practical Guide to the SEA Directive, 2005, Department for Communities and Local Government.

[21] EA, NRW and Ofwat (2022) *Water Resources Planning Guideline*. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

Figure 1.1: SEA Process Stages



Source: A practical Guide to the Strategic Environmental Assessment Directive, 2005[22]

1.2.6 During production of the Scoping Report (May 2022) as part of Stage A of the SEA process, an SEA Framework was developed which included SEA objectives and indicators (see **Annex 1: Appendix E**). The SEA objectives and indicators have been used during the assessment stage (Stage B) to appraise the WRMP24 options, as well as the preferred plan (Best Value) and alternatives (Least Cost and Worst Case) to determine their potential environmental effects. The WRMP24 SEA objectives support the SWW outcomes for customers and the environment, the Defra Guiding Principles for water resource planning, and the Defra 'Creating a great place for living: Together we are building a green and healthy future'.

1.3 Purpose of the Environmental Report

1.3.1 The purpose of this Environmental Report (Stage C) is to present the results of the SEA of the draft WRMP24 including the potential effects (positive and negative) of the options included within the draft plan (covering Stages B to D, in **Figure 1.1** above). This includes assessment of in-combination and cumulative effects, mitigation and enhancement measures, and monitoring proposals. The Environmental Report has been published for consultation alongside the SWW draft WRMP24.

1.3.2 The SEA process has involved the assessment of 42 water resource supply options and 15 demand reduction options against the SEA framework. Due to the volume of options, this Environmental Report presents the high-level findings of the detailed option assessment matrices and summaries of effects against the SEA objectives. The detailed options

[22] DCLG (2005) *A 'Practical Guide to the Strategic Environmental Assessment Directive', Pages 26 – 29.* Available at: https://www.gov.uk/government/publications/strategic-environmental-assessment-directive-guidance

assessment matrices have been provided to the Environment Agency, Natural England, Historic England and Ofwat for consultation (**Annex 6: Appendix L, M, N, O, P, Q**).

1.3.3 The structure of the Environmental Report is presented below:

- Chapter 1 – Introduction to the SWW WRMP24, the SEA Process and Requirements;
- Chapter 2 – Description and Context of the WRMP24;
- Chapter 3 – Summary of the Scoping Stage Tasks and SEA Scoping Report Consultation;
- Chapter 4 – Relationships with Other Plans and Programmes Review;
- Chapter 5 – Baseline Environmental Review;
- Chapter 6 – Key Sustainability Issues and Opportunities;
- Chapter 7 – Development of SEA Framework;
- Chapter 8 – Environmental Assessment Methodology;
- Chapter 9 – Assessment of the Draft WRMP24 Options;
- Chapter 10 – Appraisal of the WRMP24 and Decision Making;
- Chapter 11 – Mitigation and Monitoring Proposals;
- Chapter 12 – Consultation and Next Steps;
- Annex 1:
  - Appendix A – SEA Process Tasks;
  - Appendix B – Policy, Plans and Programmes Review;
  - Appendix C – Baseline Information;
  - Appendix D – Baseline Maps;
  - Appendix E – Assessment Scoring Criteria;
  - Appendix F – SEA Scoping Report Consultation Log;
  - Appendix G – SEA Quality Assurance (QA) Checklist;
- Annex 2:
  - Appendix H – HRA Technical Note;
- Annex 3:
  - Appendix I – WFD Assessment Technical Note;
- Annex 4:
  - Appendix J – BNG and NCA Assessments Technical Note;
- Annex 5:
  - Appendix K – INNS Assessment Technical Note;
- Annex 6:
  - Appendix L – Bournemouth WRZ SEA Assessment;
  - Appendix M – Colliford WRZ SEA Assessment;
  - Appendix N – Roadford WRZ SEA Assessment;
  - Appendix O – Wimbleball WRZ SEA Assessment;
  - Appendix P – Isles of Scilly WRZ SEA Assessment; and
  - Appendix Q - Demand Options SEA Assessment.

1.4 Limitations of the Environmental Report

1.4.1 Mott MacDonald has relied on published data and information provided by SWW 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 WRMP24.

1.4.2 The SWW WRMP24 covers a substantial geographical area. Therefore, the baseline summarised in this report is a high-level review of conditions within the region. A Geographic Information System (GIS) tool has been developed to hold location specific baseline information. This tool has been used during the options assessment to provide more detailed information to enable the assessment of effects of each option and the in-combination effects of the draft plan. A range of baseline datasets under each SEA objective have been used (as set out in **Annex 1: Appendix E**).

1.4.3 Detailed local baseline data such as local (non-designated) wildlife sites, Local Plan housing allocations and minerals and waste allocations were included where available. County Wildlife Site (CWS) information has been provided for Devon, Cornwall and Somerset County Councils. At the time of writing no CWS information was available for Dorset Council and as such has not been included within the SEA assessments.

1.4.4 The option assessments and in-combination effects assessments have been based on options information provided by SWW, which was digitised for GIS usage by Mott MacDonald. It should be noted that options were at varying levels of development and therefore, the information available to inform the options assessments varied in detail.

1.4.5 SEA assessments have been undertaken for 42 supply options and 15 demand options for this Environmental Report. Ongoing stakeholder engagement by SWW has continued to identify new options and discount non-feasible options. Assessments of options that were later discounted as unfeasible have not been included in this Environmental Report.

1.4.6 HRA ToLS, WFD Level 1 assessments, INNS screenings, BNG and NCA assessments have been completed (or scoped out as required) for the 42 supply options feeding into the draft WRMP24.

1.4.7 Informal HRA AA, WFD Level 2 assessments and INNS risk assessments have also been undertaken where required, and findings included within this Environmental Report and technical appendices.

1.4.8 Supply-side and demand options have undergone continuous development through the production of the draft WRMP24. The options outlined within this Environmental Report have been assessed as per the information available at the time of writing. It is recognised that options may be further developed, and additional demand and supply-side options are likely to be identified and brought forward for assessment and future inclusion within the Environmental Report.

1.5 Next Steps

1.5.1 This Environmental Report has been issued for formal public consultation and will be updated as necessary in line with consultee responses. The SEA assessments will also be updated if any WRMP24 options are changed or refined to ensure that the final WRMP24 is fully reflected in the final Environmental Report.

1.5.2 Once the final WRMP24 is adopted, a SEA Post-Adoption Statement will be issued to outline how environmental considerations have influenced the plan, how consultee comments have been taken into account, and outline the process of ongoing monitoring measures.

1.5.3 Monitoring will be carried out by SWW following adoption of the WRMP24.

2 Description and Context of the WRMP24

2.1 Background and Purpose

2.1.1 SWW has a statutory obligation to produce a WRMP every five years, which sets out how they intend to maintain the balance between supply and demand for water over a minimum 25-year period. SWW is due to publish its next WRMP in 2024. The new WRMP24 is the subject of this SEA.

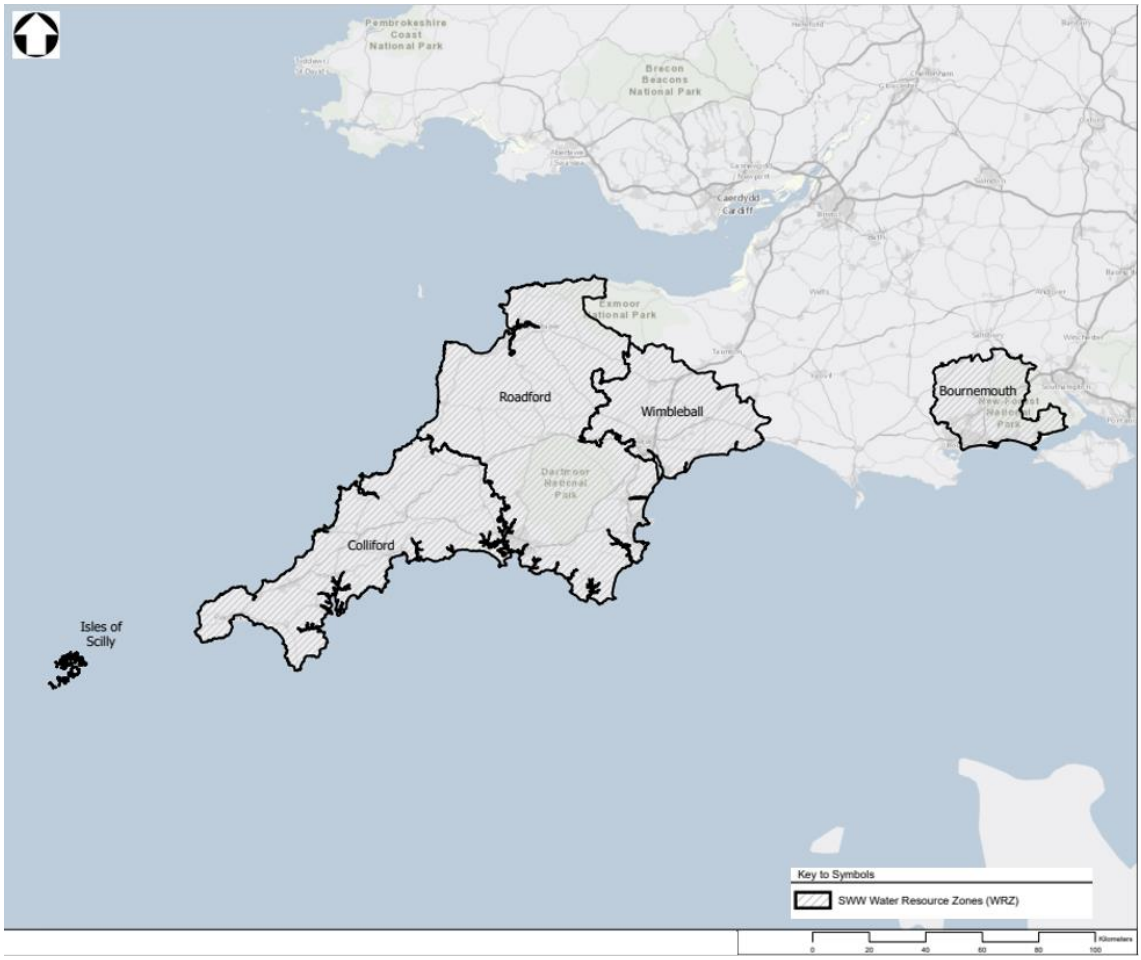
2.1.2 The SWW supply area covers Devon, Cornwall, the Isles of Scilly and parts of Dorset, Somerset, Wiltshire and Hampshire, and provides drinking water to a population of 1.7 million. Water resources in the SWW supply area consist of three large reservoirs, a number of smaller reservoirs, river intakes, and some groundwater sources which are predominantly in East Devon.

2.1.3 The SWW supply area is split into five Water Resource Zones (WRZs) in total. A WRZ is defined as ‘an area within which the sources of water and distribution of water to meet demand, is largely self-contained (apart from any agreed bulk transfers)’23. Three WRZs are operated in conjunction with one another to maximise water availability, these are Colliford, Roadford, and Wimbleball WRZs. Bournemouth WRZ and Isles of Scilly WRZ operate independently. The Isles of Scilly became part of SWW’s supply area in April 2020, and are geographically remote with no connection to the mainland water supply systems.

2.1.4 The five WRZs are outlined in **Figure 2.1** below.

[23] EA, NRW and Ofwat (2022) *Water Resources Planning Guideline*. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

Figure 2.1: SWW WRZs



Source: © Copyright Esri, Intermap, NASA, NGA, USGS (2022), Mott MacDonald (2022).

2.1.5 The study area for the SEA also includes a buffer around the plan area to capture additional receptors that may be affected by the WRMP24 options, as there are potential for effects outside the SWW region or from options close to the SWW plan boundaries.

2.2 Development of the WRMP24

Supply and Demand Options

2.2.1 SWW has developed a range of options to address the potential future water supply deficit. These have been developed by SWW, with consideration of a number of factors including engineering viability, costs and environmental impacts among others. The draft WRMP24 includes both supply and demand options. The broad supply option types that are being considered by SWW include:

- Abstraction from rivers – including increases in existing abstraction licences; abstraction of compensation flows; or reuse of previously discussed water intake points;
- Reservoirs – reservoir options include the creation of new reservoirs, increases in abstraction limits for existing reservoirs, or the enhancement of existing reservoirs to increase their capacity e.g. by dam raising;
- Groundwater sources – including new boreholes or recharge of aquifers; and
- Water treatment works (WTW) – including construction of new or replacement WTW, or improvements to the efficiency or increased capacity of existing WTW.

2.2.2 The options to reduce demand include measures such as leakage reduction, network metering and customer water efficiency measures.

2.2.3 During the draft WRMP24 development, work remained ongoing to refine the supply and demand options. New options were identified during this process and others removed when confirmed as unfeasible, as the environmental and engineering assessments were progressed in more detail. The full list of supply and demand options included in the draft WRMP24 at the time of writing in December 2022 are presented in **Table 2.1**Table 2.1 and **Table 2.2**Table 2.2. A list of rejected options with the rationale for removal is included in **Section 10.6.10**.

Strategic Resource Options

2.2.4 There are currently two confirmed SROs within the draft WRMP24, which are significant strategic options spanning across water companies. These SROs are as follows:

- BNW7 Mendip Quarries SRO – Reservoir and water transfer; and
- BNW8 West Country South Poole Effluent Recycling & Transfer (PERT) SRO – Poole Harbour effluent reuse.

2.2.5 SROs undergo a separate assessment process to the WRMP24 supply and demand options noted above. The results of the environmental assessments undertaken for the SROs for the RAPID Gate 1 submission have been used to inform the development of the SWW WRMP24, in addition to any early Gate 2 studies.

2.2.6 A third potential SRO has recently been identified by SWW. This is Cheddar 2 New Strategic Regional Reservoir and Transfer (BNW17). It has not yet been confirmed whether this will be included in the WRMP24 as an SRO or a WRMP24 supply option. As this scheme is in the early stages of investigation, at the time of writing there was not information available to undertake environmental assessments. This scheme will be included in more detail in the next version of this Environmental Report, when the nature of the Cheddar 2 option is confirmed and information is available.

Preferred Plan and Alternatives

2.2.7 SWW used a variety of factors including engineering, financial, environmental, customer/social issues to identify a preferred plan for the draft WRMP24, and two alternative plans. The plans each comprise a different selection of the supply and demand options, which best meet the required aim of the plan or alternative plan. The options that comprise each plan were determined by SWW's modelling process, see **Section 8.7.2** for more detail on this process. The plans assessed as part of the draft WRMP24 development were:

- Best Value Plan (preferred plan) – using best value applied to SWW modelling outputs;
- Least Cost Plan (alternative) – using SWW cost-based modelling outputs only; and
- Worst Case Plan (alternative) – assuming high climate change and environmental factors impact supply WAFU and demand.

2.2.8 These three plans were assessed at a programme-wide scale using the SEA Assessment Framework, which identified the sustainability risks and opportunities associated with each plan as a whole.

2.2.9 As noted above, individual supply and demand options were revised during the plan development process. This resulted in changes to the identified Best Value Plan, with the current preferred plan confirmed in December 2022 and assessed in this Environmental Report.

2.2.10 The two alternative plans were the alternatives being considered by SWW at the time of writing this Environmental Report, and are therefore reflected in the SEA findings. SWW's work on

alternative plans has remained ongoing and any new alternative plans will be fully assessed and incorporated into the next version of this Environmental Report.

Catchment Management

2.2.11 There are currently no catchment management options within the draft WRMP24, however this area is being reviewed by SWW. Should any catchment management options be identified, these will be assessed as part of the SEA process and included in the next version of this Environmental Report. SWW currently addresses catchment management through their 'Upstream Thinking Catchment Management Initiative'. This is a catchment management programme where SWW work with local stakeholders to deliver environmental improvements and improved water quality across catchments. This includes restoring peatlands, advice and grants for farmers, help with obtaining enhanced environmental stewardship schemes, soil tests along with payments for ecosystem services.

2.2.12 SWW have also established a Catchment Based Approach (CaBA) which is an initiative that works in partnership with Governments, Local Authorities, Water Companies, businesses and more, to engage people and groups across society to help improve the water environment.

2.2.13 SWW recognises the importance of nature-based solutions (NBS) in delivering significant benefits for the environment and balancing the water resources supply. SWW have committed to co-design and co-deliver a series of catchment and NBS actions in partnership with several of their key stakeholders. This will be achieved by incorporating water resource interventions into the current and future Upstream Thinking Programme.

2.2.14 SWW are also planning a series of action-orientated investigations and demonstrator projects designed to build their capacity and capability to target, design, deliver and evaluate catchment and NBS that achieve water resources outcomes.

Table 2.1: Draft WRMP24 Supply Options

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
Bournemouth	BNW1	Redevelopment of existing sources with increased yields	Borehole development, existing borehole remedial works.	Borehole development, existing borehole remedial works.	1
Bournemouth	BNW3	Groundwater Sources	Wimborne transfer to Longham – license change	Transfer of the groundwater abstraction licence from Wimborne to Longham on the River Stour.	4
Bournemouth	BNW6	Aquifer Recharge	Longham Aquifer Recharge	Aquifer storage and recovery (ASR) at Longham. Pumping and storage of water in winter months for subsequent abstraction.	10
Bournemouth	BNW11	Water Transfer	Christchurch WWTW IPR2 Transfer to Longham Lakes	Additional treatment (nutrient removal) at Christchurch before pumped transfer (29km of rising main) to Longham Lakes.	14
Bournemouth	BNW17	New Reservoir	Cheddar 2 new strategic regional reservoir and transfer	The scheme is to fill a new, Cheddar 2 reservoir, alongside the existing reservoir, from Cheddar Springs and the river Axe, under the constraints of Bristol Water's existing abstraction licences.	36
Colliford	COL2	Direct River Abstraction	Colliford PS Stage 2 – River Camel Abstraction	New abstraction licence. New river intake and pumping station at Nanstallon, for 90Ml/d at 120m head. 15km of 900m diameter pipeline from the intake to Restormel WTW. Upgrade to existing Restormel WTW intake to pump 110Ml/d (an increase of 15Ml/d). Raw water is then pumped to Colliford Reservoir via existing main.	15
Colliford	COL3	Direct River Abstraction	Abstraction of Colliford compensation flows when making supply releases	Abstraction of Colliford compensation flow when making supply releases. No infrastructure changes required.	2.3
Colliford	COL4	Direct River Abstraction	Abstraction of Siblyblack compensation flows when making supply releases	Abstraction of Siblyback compensation flow when making supply releases. No infrastructure changes required.	1.5
Colliford	COL5	Direct River Abstraction	Increase Wendron annual licence and de-couple from Stithians	No infrastructure changes required.	1 - 2
Colliford	COL6	Direct River Abstraction	River Hayle abstraction	Abstraction from River Hayle at existing disused intake, treat abstracted water at new onsite treatment works.	1 - 2
Colliford	COL9	New reservoir or development of existing source or mineral extraction workings	Lewsidden Pool	Transfer of former quarry water to Drift Reservoir via Sancreed stream. Distance from Leswidden Pool to Sancreed Stream (5km estimate).	5.46

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
Colliford	COL11	New reservoir or development of existing source or mineral extraction workings	Hawk's Tor Pit	Transfer to Colliford Reservoir.	3
Colliford	COL12	Groundwater Sources	Stannon daily abstraction licence	Increase to the daily limit to the abstraction licence of 4Ml/d to 8Ml/d for up to three months in any one year. Pumps to be uprated and possible power upgrade. A 0.2Ml/d stream support facility will be constructed discharging from the lake to the adjacent stream.	4
Colliford	COL15	Increase WTW capacity to licence maximum	Restermol WTW	Increasing Restormel WTW up to its maximum licensed abstraction and enable more effective use to be made of Colliford/ River Fowey resources system.	5
Colliford	COL18	Reintroduce more regular use of existing sources	Porth/ Rialton	New intake structure required at Rialton. RWPS and pipeline to Coswarth SRES site. Building new WTW at Coswarth SRES site to treat river water. To treat 6Ml/d, with connection to existing distribution system.	4
Colliford	COL19	Reintroduce more regular use of existing sources	Boswyn Stream/ Cargenwen Reservoir/ Carwynnen Stream	Re-introduce abstractions of abstraction points at each of these sites.	3
Colliford	COL20	Direct River Abstraction	River Fal new abstraction	New abstraction on the River Fal near Lanihome. New intake, onsite WTW and connection to distribution system.	25
Roadford	ROA2	Direct River Abstraction	River Erme	Intake relocation, update to the River Erme abstraction licence and new pumping station. Two possible locations have been proposed, option ROA2a is situated within arable farmland where option ROA2b is proposed within the existing Ivybridge STW.	1
Roadford	ROA3	Direct River Abstraction	River Yealm	Intake relocation and new pumping station. Additional pipeline may be required to connect new intake point with existing South Devon Spine Main pipe network.	3
Roadford	ROA4	Direct River Abstraction	Abstraction of Roadford compensation flow at Gunnislake when making supply releases	No infrastructure changes required.	3.7
Roadford	ROA6	New reservoir or development of existing source or mineral extraction workings	Upper Tamar Lake increasing annual license	Increasing daily abstraction limit, upgrades to WTW and distribution network.	1

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
Roadford	ROA7	Increase WTW to licence maximum	Expansion of Northcombe WTW to 60Ml/d	Treatment works to be able to deliver a minimum of 60Ml/d. additional 10Ml/d pumping capacity at Roadford reservoir.	10
Roadford	ROA8	Source optimisation – Reducing WTW minimum capabilities	Tottiford WTW – Reduce WTW minimum capacity	Reduce WTW minimum capacity. Through process control changes to allow minimum flowrates to be treated. Enabling the WTW to a reduced flow during periods of low demand, reserving water resources for use at time of increased demand. The source optimisation will improve control systems, principally chemical dosing, with some allowance for flow controls, isolation and ICA/SCADA improvements. Changes will occur within the existing WTW site footprint, through reducing the minimum output allows the WTW to run at a lower output over a longer period of time.	1
Roadford	ROA10	Source optimisation – Reducing WTW minimum capabilities	Avon WTW – Reduce WTW minimum capacity	Reduce WTW minimum capacity. Through process control changes to allow minimum flowrates to be treated. Enabling the WTW to a reduced flow during periods of low demand, reserving water resources for use at time of increased demand. The source optimisation will improve control systems, principally chemical dosing, with some allowance for flow controls, isolation and ICA/SCADA improvements. Changes will occur within the existing WTW site footprint, through reducing the minimum output allows the WTW to run at a lower output over a longer period of time.	1
Roadford	ROA11	Source optimisation – Reducing WTW minimum capabilities	Meldon WTW – Reduce WTW minimum capacity	Reduce WTW minimum capacity. Through process control changes to allow minimum flowrates to be treated. Enabling the WTW to a reduced flow during periods of low demand, reserving water resources for use at time of increased demand. The source optimisation will improve control systems, principally chemical dosing, with some allowance for flow controls, isolation and ICA/SCADA improvements. Changes will occur within the existing WTW site footprint, through reducing the minimum output allows the WTW to run at a lower output over a longer period of time.	1
Roadford	ROA12	Reintroduce more regular use of existing sources	Slade and Horedown WTW (GAC)	Installation of new pumping station at Slade reservoir and new 4Ml/d GAC plant at Horedown WTW.	2
Roadford	ROA13	Reintroduce more regular use of existing sources, water quality management at WTW	Duckaller and Vennbridge	Changes to abstraction licences and 4Ml/d nitrate removal plant installation at Duckaller pumping station to facilitate full use of sources.	0.4

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
Roadford	ROA14	New reservoir or development of existing source or mineral extraction workings	Raise Avon Dam	Raise Avon Dam by 2m and increase in reservoir size by 50m from current reservoir edge. Subject to structural engineering approval.	
Roadford	ROA15	New reservoir or development of existing source or mineral extraction workings	Gatherley Phase 2	Pipeline from abstraction point in River Lyd to Roadford Lake Reservoir. Completion of scheme to allow 125Ml/d to be transferred to Roadford Reservoir. Dual main required between River Lyd and Roadford Reservoir.	125
Roadford	ROA16	Increase WTW capacity to licence maximum	Littlehempston WTW	Upgrade of the Littlehempston WTW.	6
Wimbleball	WIM1	Direct River Abstraction	Abstraction of Wimbleball compensation flow at Northbridge when making supply releases	No infrastructure changes required. Abstracted water will have come from Wimbleball Reservoir. Downstream of abstraction point, the River Erme will have a reduced flow, it is assumed that there will be a small increase in energy due to increased water treatment and pumping.	9
Wimbleball	WIM2	Groundwater Sources	Sidford borehole commissioning	Equip and make operational existing borehole; pump, headworks, control and monitoring system, connecting pipework. New groundwater source treatment system including chlorination and iron and manganese removal plant, within existing site footprint.	1.5
Wimbleball	WIM4	Groundwater Sources	Wilmington springs annual abstraction increase	No infrastructure changes required. A reduction in flow downstream in the Umborne Brook and a very small increase in energy required for the increased water treatment / distribution. The current intake is restricted by the current licence. The licence will be varied to allow a greater volume of water to be taken over the year.	0.4
Wimbleball	WIM5	Reclaimed water, water reuse, effluent reuse	Indirect potable reuse – stream support for Dotton WTW	Pumped treated effluent from Sidmouth WWTW directly to the River Otter using a new pipeline (5km) and outfall to augment the river during low flow periods. High pumping requirements due to a height variance in the pipeline route.	2
Wimbleball	WIM6	Increase WTW capacity to licence maximum	Increase Allers WTW capacity	Increase daily abstraction licence to 36Ml/d. upgrade Bolham abstraction to pump additional 4Ml/d. upgrade WTW to treat an additional 4Ml/d, with distribution network improvements.	4
Wimbleball	WIM7	Increase WTW capacity to licence maximum	Increase Pynes to licence limit 66.46Ml/d	Upgrade WTW to treat an additional 6.5Ml/d. The final works could include new river intake streams, raw water main pipeline replacements, installation of additional of water	6.5

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
				treatment equipment, and pump replacements. There will be no distribution network changes. During operation, there will be an increased energy consumption to accommodate for the additional water treatment and distribution. The WTW extracts untreated water from the River Exe. The natural river flows can be supplemented with releases from Wimbleball reservoir in the River Haddeo, a tributary of the River Exe.	
Wimbleball	WIM8	Redevelopment of existing sources with increased yields (changes to system operation). Reintroduce more regular use of existing sources	Brampford Speke borehole	Agree licence changes with EA. Site commissioning.	3.5
Wimbleball	WIM9	Redevelopment of existing sources with increased yields (changes to system operation). Reintroduce more regular use of existing sources	Stoke Canon borehole	Agree licence changes with EA. Install new power supply. Site commissioning.	4.5
Isles of Scilly	ISMY1	Groundwater sources	St Mary's new borehole (location 1)	Drilling of new supply borehole 30m depth, 150mm diameter borehole / c. 1kW pump. Associated infrastructure (headworks, kiosk and pipework) wastewater piped via raw main (estimated 32mm diameter for 500m distance) to existing WTW. Assumes spare capacity at existing WTW. No additional requirement.	0.1 – 0.15
Isles of Scilly	ISMY2	Groundwater sources	St Mary's new borehole (location 2)	Drilling of new supply borehole at 30m depth with 150mm diameter borehole / c. 1kW pump. Associated infrastructure (headworks, kiosk and pipework) and requiring standalone treatment, with water piped directly into supply network (estimated 32mm diameter for 500m distance).	0.1 – 0.15
Isles of Scilly	ISMY4	Redevelopment of existing sources with increased yields	St Mary's - Increase Existing Desalination Plant Capacity	Additional process stream at existing RO plant. New building required.	0.1 – 0.25
Isles of Scilly	ISB4	Redevelopment of existing sources with increased yields	Bryher – Increase Existing Desalination Plant Capacity	Additional process stream at existing RO plant plus increased borehole yield and/or new borehole source. New building required.	0.1 – 0.2
Isles of Scilly	IST1	Groundwater sources	Tresco new borehole	Drilling of new supply borehole to South or east of island. Assumed 30m depth, 0.75kW pump, 100mm diameter	0.03

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
				borehole pipework, with associated infrastructure (headworks, kiosk and pipework) and on-site treatment (assume UV disinfection) wastewater piped via new raw main (estimated 40mm diameter for 500m distance) to existing WTW. Cost for new WTW and UV.	

Table 2.2: Draft WRMP24 Demand Options

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
SWW	NHH_A_001	Water efficiency audit	Business Efficiency Visits (BEV)	Visits to businesses including undertaking a water audit, advice and tailored retrofit of free water efficient devices to bathrooms and kitchens only (not wider process water). Business sectors are targeted based on high potential for water savings. BEV's are undertaken following liaison with Water Retailers. Specific BEVs to target individual customers through detailed analysis of MOSL data.	0.49
SWW	NHH_A_003	Leak Detection	Business Efficiency Visits (BEV) – Targeted Business Leakage	BEV particularly targeted at leakage detection and fix. Targeted where high-water usage would indicate that leakage might be occurring. BEV are undertaken following liaison with Water Retailers. Specific BEVs to be target individual customers through detailed analysis of MOSL data.	0.16
SWW	NHH_A_004	Water efficiency audit	Business Efficiency Visit (BEV) – Agriculture Leakage	This option specifically targets the agricultural sector and is delivered in partnership with a third party (e.g., FWAG South West, AHDB, NFU). Expert water audit is provided on farms including advice, improvements, and fixes (target of dairy sector).	Undetermined
SWW	NHH_A_005	Water Efficiency Audit and Leak Detection	Virtual Business Efficiency Visit (VBEV) - Water Audits and Devices	This option provides targeted visits by process engineers to large scale businesses to look at how water use can be reduced on site. The output will be recommendations with indicative cost and efficiencies that could be achieved (solutions could include zero liquid discharge (ZLD), water reuse). This option would also consider any potential for the use of non PWS supplies. Target visits based on MOSL data to a limited number of large-scale water users.	0.04

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
SWW	NHH_A_007	Water efficiency audit	Virtual Business Efficiency Visit (VBEV) – Water Audits and Devices	Virtual business use assessment undertaken online with an online efficiency representative. The assessment provides advice, recommendations, and actions, and could include sending free water efficiency devices for self-install or a professional plumber visit (e.g., for leaky loo fix).	0.07
SWW	NHH_E_001	Water efficiency advice	Sector Specific Water Efficiency Advice	The development of a central website/customer engagement dashboard website to provide information on water efficiency campaigns and online tools for customers to engage with that provide water efficiency advice (e.g., water calculators - effectively acting as a self-audit) and wider resources. This could be extended to allow customers to login to their accounts to look at real time water use from Smart meters: advice would then be more tailored.	0.6
SWW	NHH_N_001	Rainwater harvesting	Business Efficiency Visits (BEV)	This option would work with developers to provide rainwater harvesting systems to provide a non-potable supply for use within the new commercial properties. Water is collected from roof runoff and a sustainable drainage system is created. The collected water goes through a basic level of treatment. Rainwater harvesting is included in the development to meet planning conditions.	1.21
SWW	NHH_N_006	Reuse of Treated Wastewater Effluent	Business Efficiency Visits (HEV) – Targeted Business Leakage	Reuse treated wastewater effluent from industrial customers is used for supply to industrial customers. This reclaimed water could be used for industrial/commercial use rather than potable water.	0.62
SWW	HH_A_002	Efficiency visits and audits	Home Efficiency Visits (HEV) – Audit with Device - Metered	Visits include undertaking a water audit, advice and tailored retrofits of free water-efficient devices where required (e.g. leaky loo fix) to households with a meter already installed.	Undetermined
SWW	HH_A_003	Efficiency and Audit	Home Efficiency Visits (HEV) – Audit with Device - New Meter	Visits include undertaking a water audit, advice and tailored retrofits of free water efficient devices where required (e.g. leaky loo fix). HEV's are provided alongside the company's ongoing smart meter rollout.	Undetermined
SWW	HH_E_009	Efficiency visits and audits	Home Efficiency Visits (HEVs) – Local Authorities etc.	Visits include undertaking a water audit, advice and tailored retrofits of free water efficient devices where required. Targeted at specific housing stock of local authorities or housing associations. The visits are selected based on high potential for water savings.	Undetermined

WRZ	Option Ref	Scheme Type	Option Name	Description	Yield (Ml/d)
SWW	HH_E_0013	Efficiency visits and education	School Visits	This option involves working in partnership with schools across the WCWR region to promote water efficiency. The aim is that education regarding water efficiency starts at an early age and therefore will result in long-term demand savings. This would be tailored for children for the different key stages. It would provide lesson plans and material to allow teachers to deliver water efficiency lessons, this would be provided to all schools. This would also be accompanied by a set number of school visits each year (targeted to areas of high water use or demography).	Undetermined
SWW	HH_E_0017	Education	Targeted Water Efficiency Programmes	A focused water efficiency programme at targeted locations across the WCWR area including advertising, education, and other outreach work.	Undetermined
SWW	HH_M_009	Data analysis and behaviour change	Watersmart	This option makes use of customer meter and other data to provide personalised bills and behavioural nudges (e.g. comparisons against local averages).	
SWW	Water Labelling Scenario	Standards	Water Labelling Scenario	Water labelling – with minimum standards	<1Ml/d

3 Scoping Summary

3.1 Introduction

3.1.1 The Scoping Stage of the SEA process sets the context and scope of the SEA and Environmental Report. Specifically, the scoping stage aimed to:

- Review relevant international, national and local policies, plans and programmes and their implications for the WRMP;
- Establish the baseline environmental and socio-economic information and key sustainability issues and opportunities for the SWW WRMP24 area;
- Set the context and objectives of the SEA;
- Decide on the scope for the SEA, ensuring that it covers all the likely significant environment effects of the WRMP; and
- Provide an opportunity to engage and collaborate with the Consultation Bodies[24].

3.1.2 **Chapters 4 and 5** of this Environmental Report provide a summary of the scoping information as presented in the SEA Scoping Report (Mott MacDonald, April 2022) and includes updates following the scoping consultation where relevant. These chapters cover a summary of the tasks under SEA Stage A including the following with full details presented in **Annex 1: Appendix B, C and E.**

- Scoping Consultation;
- Policies, Plans and Programmes Review;
- Baseline Information including Future Trends;
- Key Sustainability Issues and Opportunities; and
- SEA Framework.

3.2 Scoping Consultation

3.2.1 The scoping report was issued for formal consultation for five weeks between 6th May and 9th June 2022. During the consultation period, statutory Consultation Bodies and other key stakeholders (including the public) had the opportunity to comment on the proposed scope and approach for the SEA. The comments received from the formal consultation process and the resulting updates made to the Environmental Report are detailed in **Annex 1: Appendix F.**

3.3 SEA Screening

3.3.1 Water companies, as responsible authorities, must determine if their WRMP falls within the scope of the SEA Directive. SWW's WRMP24 has been screened to determine whether a SEA of the WRMP is required. The decision tree in **Section 3.2.1** of the UK Water Industry Research (UKWIR) guidance 'Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans'[25] was used.

3.3.2 The results of the screening exercise were as follows:

- The WRMP has been prepared and adopted by SWW who, under the SEA Directive, is considered an "authority";

[24] The Consultation Bodies are: Natural England, Historic England, and the Environment Agency.

[25] UKWIR (2021) *Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans*.

- The WRMP is required by legislative provision, being a statutory document under the Water Act 2003, amending the Water Industry Act 1991;
- The WRMP has been prepared for water management and also sets a framework for future development consent as it contains options for new infrastructure for the sourcing, treatment, storage and/or transfer of water;
- The area of jurisdiction for the WRMP would be considered greater than 'local level' and the options to be included within the plan are not within the meaning of 'small areas'. As WRMPs are required as new plans on a cyclical basis to provide for updated supply-demand forecasts over a long-term planning horizon, they are not considered to be 'minor modifications' to the previous plan;
- A WRMP meets none of the exemption criteria e.g. required for national defence or civil emergency; and
- In light of the above SEA screening results, a SEA of the WRMP24 is required.

4 Relationships with other Policies, Plans and Programmes

The SEA Regulations requires:

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

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

SEA Regulations Schedule 2 (1) and (5)

4.1 Water Resource Planning Guidelines

4.1.1 New Water Resource Planning Guidelines were published by the EA, NRW and Ofwat for the WRMP24 in 2022. The Guidelines set out the framework and requirements for developing a WRMP with the objective 'to efficiently deliver resilient, sustainable water resources for customers and the environment, both now and in the long term'[26].

4.1.2 The Guidelines highlight the following key environmental considerations:

- Reflect the government's 25-year Environment Plan including:
  - Setting out ambitions for environmental sustainability and resilience;
  - Supporting nature recovery;
  - Using natural capital in decision-making;
  - Using a catchment approach;
  - Delivery of net gain for the environment;
  - Impact of climate change with regard to river flows and groundwater recharge, and any future supply options;
  - Issue of spread of INNS and proposed measures to mitigate that risk;
  - Enhancing the natural resilience of catchments by effective catchment management planning, to increase the amount and/or quality of water available for abstraction without posing unacceptable pressures on the environment; and
  - Consider whether abstractions are truly sustainable, looking across a catchment as a whole.

4.1.3 The Guidelines and supplementary guidance notes also set out the specific environmental assessment requirements that need to be undertaken when developing the WRMP24. Key updates from WRMP19 include:

- The requirement to demonstrate BNG for options and the plan;
- The stronger focus and detailed guidance on natural capital including the five minimum ecosystem services to be considered and natural capital metrics; and

[26] EA, NRW and Ofwat (2022) *Water Resources Planning Guideline*, Section 1.1.1. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

- Improved guidance on approaches to integrate environmental outputs into options decision-making and programme appraisal.

4.1.4 The supplementary guidance note 'Environment and Society in Decision-Making'[27] provides additional detail on how to integrate environmental and social considerations into decision-making in the WRMP process through SEA, BNG assessment and NCA.

4.1.5 The Guidelines state there is a need to comply with environmental legislation, SEA and HRA. The results of the SEA and other environmental assessments are used to aid decision-making on mitigation requirements, options development, and selection of preferred options for the WRMP24. This supports the wider aim of developing a WRMP that meets legislative environmental requirements and provides environmental net gain.

4.1.6 The UKWIR technical guidance[28] on WRMP assessments includes a quality assurance checklist for the SEA Environmental Report, which provides a summary of the legal requirements for the report. This QA checklist has been used during development of the SWW SEA to confirm the assessment approach and reporting are compliant with legislation. The completed QA checklist is presented in **Annex 1: Appendix G**.

4.2 WRMP Environmental Assessment and the Regional Planning Process

4.2.1 West Country Water Resources (WCWR) is one of the five water resource groups created under the National Framework for Water Resource. SWW, alongside Wessex Water and Bristol Water are the three public water companies which cover the six distinct WRZs. The WCWR Draft Regional Plan[29], which takes a long-term view of water planning up to 2050, has recently been published for consultation in January 2023. The key aim of the Plan is to align the needs of the region between the three public water supply companies and related stakeholders. The WCWR Draft Regional Plan has been reviewed as part of this Environmental Report to ensure the proposed approach to undertaking the SEA aligns with the draft Plan and its aims, such as meeting future resilience to water scarcity and ensuring environmental improvements.

4.2.2 The current iteration of the WCWR Draft Regional Plan predominantly draws on the draft WRMPs which are all subject to SEA and HRA, in line with National Framework requirements. There are currently no SEA methodology or assessments available in the WCWR Draft Regional Plan.

4.2.3 The SWW draft WRMP24 SEA includes an in-combination effects assessment, which has considered transfers which are outside the SWW area or in close proximity to the plan boundary with potential pathways affecting receptors outside the plan area. Further details on the proposed environmental assessment approach including the SEA methodology is presented in **Section 8 8**of this Environmental Report.

Strategic Resource Options

4.2.4 Within the WCWR Draft Regional Plan there are three Strategic Resource Options (SROs) which are significant strategic options spanning across water companies. Two SROs are under development in the SWW area outlined in **Section 9.8**. These SROs are currently progressing within the Regulator's Alliance for Progressing Infrastructure Development (RAPID), a framework that promotes and enables strategic schemes to help support and improve the resilience of water supplies into the future. The West Country South Poole Effluent Recycling & Transfer (BNW8 in SWW's draft WRMP) was submitted to Gate 2 in November 2002 and the

[27] Environment Agency (2021) *Water resources planning guideline supplementary guidance*. Environment and society in decision-making (England). External guidance: 18643.

[28] UKWIR (2021) *Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans*, Section B.1.8.

[29] WCWRG Initial regional draft plan (2023). Available at https://www.wcwrg.org/siteassets/document-repository/reports/draft-west-country-water-resources-plan-31jan2023.pdf

proposed Gate 3 submission is March 2025. Mendip Quarries (BNW7 in SWW's draft WRMP) has a planned submission for Gate 2 in July 2023 and the proposed Gate 3 submission year is 2026.

4.3 The WRMP24 Environmental Destination

4.3.1 Environmental destination is a new term that was introduced through the Environment Agency's Water Resources National Framework[30] document, published in March 2020. The term refers to the consideration of actions to enhance the environment and build resilience to future challenges, for example, to drought, flooding, raw water quality decline, impact from INNS, land use change, and impacts from run off. This information is important to understand to ensure we meet the objective of leaving the environment in a better place for future generations. This objective is also reflected in the Government's 25 Year Environment Plan[31], which also pledged to improve resilience to drought and minimise interruption to water supplies. The 25-year plan also included a commitment for the UK Government to work with the water industry to set an ambitious personal consumption target.

4.3.2 Understanding how much water can be abstracted from the environment in a sustainable way now and in the future is important when developing a regional resilience multi-sector plan. In the past, the regional plan has taken account of the supply and demand forecasts, but not the longer-term needs of the environment. This regional plan seeks to address this by incorporating an environmental forecast which sets out potential futures, looking at water quality and availability requirements for the environment. The forecast has been based on current adverse environmental impacts, previous investigations, river basin management plans (RBMP), regional policies and a range of flow-based targets where no other evidence exists.[32]

4.3.3 The WRMP24 environmental assessments, including the SEA, support the environmental destination and regional planning by assessing and informing the long-term resilience of the WRMP24 plan and aiming to achieve a plan that provides environmental net gain.

Nature Recovery Networks and Local Nature Recovery Strategies

4.3.4 Making Space for Nature, A review of England's Wildlife Sites and Ecological Network (2010), set out the essence of what needs to be done to enhance the resilience and coherence of England's ecological networks. The report proposed that this could be summarised in four key words: more, bigger, better and joined. The Environment Act 2021 requires the preparation and publication of Local Nature Recovery Strategies setting out biodiversity priorities including opportunities for recovering or enhancing biodiversity, and production of local habitat maps to support the strategy. The Government's 25-year plan supports this by including provision for a Nature Recovery Network (NRN). The WRPG aligns with these requirements and identifies that WRMPs should support recovery and enhancement of biodiversity according to opportunities and priorities identified in relevant Local Nature Recovery Strategies and contribution to Nature Recovery Networks. Therefore, it is important that the WRMP24 identifies potential opportunities to support both Government priorities and WRMP requirements.

Water Industry National Environment Programme (WINEP)

4.3.5 The Water Industry National Environment Programme (WINEP) is the programme of actions water companies need to take to meet statutory environmental obligations, non-statutory environmental requirements or delivery against a water company's statutory functions. Water

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

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

[32] Method Statement: Environmental Ambition (Consultation version, July 2020). Available at: https://www.wrse.org.uk/media/zijbfld1/wrse_file_1333_wrse-ms-environmental-ambition-v2.pdf

companies are expected to take account of the contribution their proposed options make to the WINEP wider environmental outcomes.

4.3.6 SWW's Water Resource Team are delivering WINEP scopes of their AMP7 Investigations. These have contributed towards water resources being utilised in an environmentally sustainable way. Below is a list of the WINEP scopes SWW are currently investigating:

- **Rialton/Porth – WFD No Deterioration Investigation** - SWW will produce a hydro-ecological model which will enable assessment of whether their proposed abstraction and fully licenced abstraction (Rialton Intake license) would cause ecological deterioration. The investigation will identify and appraise options that prevent deterioration. The EA and SWW will use the assessment and options appraisal to agree the preferred mitigation option(s) to prevent deterioration to the WFD waterbody.
- **Otter Catchment Options Appraisal** - This will consider options which reduce the surface water flow deficit of surface waterbodies dependent on the Otter Valley groundwater body. The preferred option(s) will be agreed by EA and SWW. This will be used to inform implementation in AMP8 and WRMP24.
- **Camel Catchment Options Appraisal** - This will determine if abstraction licences are impacting on the ability of waterbodies to achieve their Natura 2000 Conservation Objectives or Favourable Condition for Sites of Special Scientific Interest (SSSIs). This investigation will be used to inform future decisions for implementation options which may include changes to abstractions, or wider mitigation measures.
- **Fisheries Bank Option Appraisal** - This will demonstrate the potential options for achieving Good Ecological Potential and improve compliance with the salmon conservation limit. This option appraisal will appropriately mitigate the impact of the Fernworthy Reservoir on fish passage in the South Teign River.
- **Wistlandpound Reservoir, Venford Reservoir, and Stithians Reservoir and River Kennal Heavily Modified Water Bodies (HMWB) Investigation** - SWW will determine if there is sufficient evidence to confirm that the named assets and abstraction activities are causing negative ecological impacts to downstream waterbodies. Identification and assessment of appropriate management actions to mitigate negative ecological impacts.
- **Natural Environment and Rural Communities (NERC) Investigation** - This investigation on the Beadon Brook will deliver an adaptive management trail to improve the habitat downstream for salmonids. This will include the design of a trial of gravel augmentation and/or other habitat improvements. Effectiveness on fish populations and habitats will be monitored and if they are not sufficient, further investigation will be undertaken to identify any additional/alternative requirements.
- **Burrator HMWB Adaptive Management** - SWW will plan and implement adaptive management trials of gravel augmentation/change in flow regime and/or other habitat improvement. Monitoring to be included particularly between Burrator and Sheepstor for salmonids as a protected species and to measure the effectiveness of the actions undertaken.
- **Brampford Speke and Stoke Canon WFD No Deterioration Measure Specification** - SWW will produce a hydro-ecological model which will enable assessment of whether their proposed abstraction and fully licensed abstraction (Brampford Speke and Stoke Cannon licences) would cause ecological deterioration. The investigation will include an appraisal of the options that could be put in place to prevent deterioration of ecological status. The EA and SWW will use the assessment and options appraisal to agree the preferred mitigation option(s) to prevent deterioration.
- **Wilsworthy Brook Investigation/Options Appraisal** - An investigation and options appraisal to identify a solution for the transfer of the Wilsworthy Brook (not a licensed abstraction). This currently flows into the Mine Leat and deprives Willsworthy Brook which

passes through County Wildlife Sites (CWS) before joining the River Tavy. The EA and SWW will agree the measure(s) to be implemented in PR24 and licensing requirements. These will have potential to improve flows on the River Tavy and reduce impacts of depleted reach.

4.4 Policies, Plans and Programmes Review

4.4.1 A review of the policies, plans, and programmes relevant to the SWW SEA as part of the WRMP24 has been undertaken. The aim was to determine how the emerging WRMP24 and supporting SEA may be affected by these external factors, and identify any key environmental messages and objectives. Furthermore, the WRMP24 must aim to support, and where possible strengthen, current relevant policies, plans, programmes and environmental protection legislation at international, national, and local levels, including within the SWW region. The review findings were used to inform the development of the SWW SEA Framework.

4.4.2 **Table 4.1** lists current relevant policies, plans, and programmes which were considered during the SEA scoping stage. **Annex 1: Appendix B** presents the policies, plans, and programmes review in full. These plans, policies and programmes were reviewed regularly as the locations of the options being assessed were confirmed to ensure the plans, policies and programmes at sub-regional/local level remained relevant.

Table 4.1: Relevant international, national, and regional policies, plans and programmes

Policies, Plans and Programmes

International	
● Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) ● Bonn Convention on the Conservation of Migratory Species of Wild Animals (1983) ● Convention on Biological Diversity (1992) ● Ramsar Convention - The Convention on Wetlands of International Importance (1971) ● UN Framework Convention on Climate Change (1992) ● Kyoto Protocol to the UN Framework Convention on Climate Change (1997)	● Commitments arising from the World Summit on Sustainable Development, Johannesburg (2002) ● Paris Agreement (2015) ● Charter for the Protection and Management of Archaeological Heritage (1990) ● The World Heritage Convention (1972) ● Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)
European	
● Ambient Air Quality Directive (2008/50/EC) ● Thematic Strategy on Air Pollution (2005) ● Establishing measures for the recovery of the stock of European eel 2007 (1100/2007) ● Our life insurance, our natural capital: an EU biodiversity strategy to 2020 (2011) ● Fresh Water Fish Directive (2006/44/EC) ● Directive on the Conservation of Wild Birds (79/409/EEC) (as amended) ● Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (92/43/EEC) ● Directive on Animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals (2006/88/EC) ● Limiting Global Climate Change to 2 degrees Celsius - The way ahead for 2020 and beyond (2007) ● A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy (2018) ● Promotion of the use of energy and renewable sources Directive (2009/28/EC) ● Energy Act 2013 ● Mainstreaming sustainable development into EU policies: 2009 Review of the European Union Strategy for Sustainable Development ● European Commission Environmental Liability Directive (2004/35/EC) ● Directive on the assessment of the effects of certain plans and programmes on the environment (2001/42/EC)	● The Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) (1985) ● The European Convention on the Protection of Archaeological Heritage (Valletta Convention) (1992) ● The European Landscape Convention (2006) ● The Environmental Noise Directive (2002/49/EC) ● European Soils Charter (2003) ● Thematic Strategy for Soil Protection (2006) ● The Nitrates Directive (91/676/EEC) ● The Water Framework Directive (WFD) (2000/60/EC) ● Urban Wastewater Treatment Directive (91/271/EEC) ● Drinking Water Directive (1998/83/EC) ● Directive on Bathing Water (76/160/EEC); and Directive 2006/7/EC repealing Directive 76/160/EEC (from 2014) ● Groundwater Directive (2006/118/EC) ● Marine Strategy Framework Directive (2008/56/EEC) ● Directive on the Assessment and Management of Flood Risks (2007/60/EC) ● Blueprint to Safeguard Europe's Water Resources (2012)

Policies, Plans and Programmes

National	
● The Eels (England & Wales) Regulations 2009 (as amended) ● Salmon and Freshwater Fisheries Act 1975 ● UK Post-2010 Biodiversity Framework, JNCC and Defra (2012) ● Making Space for Nature - A review of England's Wildlife Sites and Ecological Network (2010) ● Biodiversity 2020: A strategy for England's wildlife and ecosystem services, Defra (2011) ● The Conservation of Habitats and Species Regulations (2010) (as amended) ● The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019) ● Delivering a healthy natural environment. Ecosystem approach action plan, Defra (2010) ● The Invasive Alien Species (Enforcement and Permitting) Order 2019 ● The Great Britain Invasive Non-Native Species Strategy, Defra (2015) ● A narrative for conserving freshwater and wetland habitats in England, Natural England (2016) ● Conservation 21 - Natural England's Conservation Strategy for the 21st Century, Natural England (2016) ● State of Natural Capital Annual Report 2020, Natural Capital Committee (2020) ● Standing Advice on Protected Species, Natural England (2016) ● Climate Change Act 2008 ● UK Climate Change Risk Assessment, Defra (2017) ● The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting, Defra (2018) ● National Planning Policy Framework (NPPF) (2021) ● A Green Future: Our 25 Year Plan to Improve the Environment, UK Government (2018) ● Environment Act 2021 ● Securing the Future – Delivering the UK Sustainable Development Strategy (2005) ● The Natural Choice: Securing the Value of Nature, Defra (2011) ● Marine and Coastal Access Act (2009) ● The Wildlife and Countryside Act 1981 (as amended) ● Environment Protection Act 1990 ● Countryside and Rights of Way (CROW) Act	● Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment, Historic Environment (2016) ● The Setting of Heritage Assets, Historic Environment Good Practice Advice in Planning 3, Historic Environment (2017) ● Ancient Woodland and Veteran Trees: Protecting them from development, Forestry Commission and Natural England (2014) ● Our Waste, Our Resources: A Strategy for England, HM Government (2018) ● Safeguarding our Soils - A strategy for England, Defra (2009) ● Water Resources Act 1991 ● Water Industry Act 1991 ● Water Act 2003 (as amended) ● Preparing for a drier future: England's water infrastructure needs, National Infrastructure Commission (2018) ● Draft National Policy Statement for Water Resources Infrastructure, Defra (2018) ● Water for Life White Paper, Defra (2011) ● The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 (as amended) ● Protect groundwater and prevent groundwater pollution, Environment Agency (2017) ● Groundwater protection technical guidance, Environment Agency (2017) ● The Environment Agency's approach to groundwater protection, Environment Agency (2018) ● The Groundwater (England and Wales) Regulations 2009 ● Flood and Water Management Act 2010 ● National Flood and Coastal Erosion Risk Management Strategy for England, Environment Agency (2020) ● The Flood and Coastal Erosion Risk Management Policy Statement, Defra (2020) ● Flood risk assessments: climate change allowances, Environment Agency (2016) ● The Water Resources Management Plan Regulations 2007 ● Water Resources Planning Framework (2015-2065), Water UK (2016) ● Water Supply (Water Quality) Regulations 2016 (as amended) ● National Policy Statement for Wastewater (2012) ● Climate change approaches in water resources planning – Overview of new methods, Environment Agency (2013) ● Drought response: our framework for England, Environment Agency (2017)

Policies, Plans and Programmes	
● The Natural Environment and Communities Act 2006 (NERC Act) ● Creating a better place: Our ambition to 2020, Environment Agency (2018) ● UK National Ecosystem Assessment Follow-on (2014) ● National Infrastructure Delivery Plan 2016–2021, Infrastructure and Projects Authority (HM Government) (2016) ● Fixing the foundations: Creating a more prosperous nation, HM Government (2015) ● Environment Act 1995 ● The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 ● Environmental Assessment of Plans and Programmes Regulations 2004 ● Department for Environment, Food and Rural Affairs Outcome Delivery Plan: 2021 to 2022, Defra (2021) ● Planning (Listed Buildings and Conservation Areas) Act 1990 ● The Ancient Monuments and Archaeological Areas Act 1979 ● Climate Change and the Historic Environment, English Heritage (2008) ● The Clean Growth Strategy (2017)	● Future Water: the Government's water strategy for England, Defra (2008) ● Water Resources Planning Guideline, Environment Agency, Natural Resources Wales, Ofwat (2022) ● The Urban Waste Water Treatment (England and Wales) Regulations 1994 ● The Nitrate Pollution Prevention Regulations 2015 ● Managing Water Abstraction, Environment Agency (2016) ● Marine Plans – South East Inshore, South Inshore, South Offshore, Marine Management Organisation ● UK Marine Policy Statement (2011) ● Chalk Stream Restoration Strategy 2021, CaBa (2021) ● Water UK Net Zero 2030 Routemap (2020) ● Water Industry Strategic Environmental Requirements (WISER) ● Water Industry National Environment Programme (WINEP) ● HEAN 12: Statements of Heritage Significance (2019) ● Water and Wetland Heritage Strategy (2015) ● Heritage at Risk Programme
Regional and Local	
● Site Improvement Plans for Natura 2000 sites: South West, Natural England ● Local Development Plans (Various) ● Public Rights of Way Improvement Plans (ROWIPs) (Various) ● Local level Green Infrastructure Plans and Strategies (Various) ● Local Flood Risk Management Strategies (Various) ● AONB Management Plans (Various) ● National Character Area (NCA) Profiles, Natural England ● South West River Basin Management Plan (2015) ● South West River Basin Management Plan (2022) ● National Natural Capital Atlas: Mapping Indicators, Natural England (2020) ● South East River Basin Management Plan (2015) ● Draft Cycle 3 River Basin Management Plans for the South West and South East RBDs (2021) ● Catchment Flood Management Plans (2009): South West River Basin; South East River Basin. ● Catchment Abstraction Management Strategies (CAMS) (2016) (Various) ● Forward programme 2021-22, RAPID (2021)	● WCWR Regional Draft Plan (2023) ● WCWR Method Statement: Options (2022) ● WCWR Method Statement: Supply forecasting (2020) ● WCWR Method Statement: Demand forecasting (2020) ● WCWR Method Statement: Environmental Ambition (2020 ● WCWR Method Statement: Decision-making (2020) ● WCWR Method Statement: Stakeholder Engagement (2020) ● South West Marine Plan, Marine Management Organisation (2021) ● South Marine Plan, Marine Management Organisation (2018) ● Cornwall Climate Change Action Plan (2019) ● Draft Interim Devon Carbon Plan (2020) ● Draft Climate and Ecological Emergency Action Plan, Bournemouth, Christchurch and Poole Council (2021) ● Towards a Climate Resilient Somerset – Somerset's Climate Emergency Strategy (2020) ● Hampshire County Council Climate Change Strategy 2020-2025 (2018) ● Wiltshire Draft Climate Strategy (2021) ● Shoreline Management Plans (SMP2s) (Various)

Policies, Plans and Programmes	
● Meeting our Future Water Needs: a National Framework for Water Resources, Environment Agency (2020) ● Long-term water resources environmental destination, Environment Agency (2020) ● Cornwall and Isles of Scilly: Environmental Growth Strategy 2020-2065 (2021) ● Cornwall Nature Recovery Strategy (Pilot Draft v1.5): A Statement of Biodiversity Priorities (2021)	● Cycle 1 Flood Risk Management Plans for the South West and South East RBDs (2015) ● Draft Cycle 2 Flood Risk Management Plans for the South West and South East RBDs (2021) ● Devon and Cornwall Area Drought Plan (2017) [note withdrawn Sept 2022, however new version not yet released].
South West Water	
● South West Water's Climate Change Adaptation Report (2021) ● Environment Policy (2019) ● South West Water & Bournemouth Water Final Water Resources Management Plan (2019) ● SWW Drought Management Plan (2022) ● Drought Plan: Isles of Scilly (2022) ● Our Promise to the Planet: Carbon-busting Net Zero Plan, South West Water (n.d.) ● Draft Drainage and Wastewater Management Plan (2020)	● West Country South Strategic Resource Options (SROs), Gate 1 Submission Documents (2021) ● Upstream Thinking Report (2020) ● Business Plan 2020-2025 ● Asset Management Policy (2020) ● Pollution Incident Reduction Plan (2020) ● Environment Plan to 2050 (2019)

4.5 Identification of Key Themes and Messages

4.5.1 The main themes, messages and objectives from the policies, plans and programmes review that are considered relevant to the SWW WRMP24 are presented below. These are as follows:

- Conserve flora and fauna and their habitats, including designated and non-designated sites;
- Conservation and wise use of wetlands and their resources;
- Protection of wild birds and their habitats;
- Support environmental and BNG;
- Integrate ecosystem service and natural capital principles;
- Halt overall biodiversity loss and support the protection, recovery and enhancement of biodiversity;
- Contribute to nature recovery and nature recovery networks and strategies;
- Creation of green infrastructure;[33]
- Protection of landscape character and quality;
- Improve water quality so all waters achieve 'good status' as set out in the WFD;
- 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 through sustainable design;
- Reduce GHG emissions to support the transition to the UK Government's 2050 net zero target;
- Adapt to the impacts of climate change including drought, flooding and peak water demand conditions;
- Increase resource efficiency and reduce natural resource use and waste;
- Create a green economy and promote sustainable growth;
- Promote sustainable and healthy communities;[34]
- Promote social inclusion and community participation;
- Protect cultural heritage assets including archaeology and built heritage;
- Protect best quality soils and agricultural land;
- Improve the health and resilience of peatland areas; and
- Improve soil health.

4.5.2 In addition, support the Lawton recommendation[35] 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;

[33] The UK Government (2018) *25-year Environment Plan - including a sub-objective for the provision of more and better-quality green infrastructure including urban trees*. Available at: https://www.gov.uk/government/publications/25-year-environment-plan

[34] 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*".

[35] Lawton, 2010, Making Space for Nature, Recommendation 4, Page 73

- Support the UK Government's 25 Year Plan to Improve the Environment[36]:
- Using and managing land sustainably – including embedding an "environmental net gain" principle into development (as supported by the Environment Act 2021);
- 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; and
- Protecting and improving the global environment.

4.5.3 The themes, messages and objectives identified from the policies, plans, and programmes review supported the identification of key issues and opportunities for the development of the SEA Framework.

[36] 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

5 Baseline Environmental Review

5.1 Introduction

5.1.1 Current environmental and socio-economic baseline information was collated and reviewed for the SWW WRMP24 area. The baseline was collected from published sources and is summarised in the sections below. This information forms an evidence base against which environmental issues or opportunities resulting from the WRMP24 can be assessed. The baseline information is presented under the SEA Regulations topics:

- Biodiversity, Flora, and Fauna;
- Water;
- Soil;
- Air;
- Climatic Factors;
- Population and Human Health;
- Historic Environment;
- Landscape; and
- Material Assets.

5.1.2 The SWW WRMP24 covers a large geographical area, and the baseline is therefore a high-level review of conditions within the region, rather than being location specific.

5.2 Baseline Information

A summary of the baseline information collected for the WRMP24 is presented below. A full review of the baseline is presented within **Annex 1: Appendix C**. Maps showing key spatial baseline data are presented within **Annex 1: Appendix D**.

Biodiversity, Flora and Fauna

5.2.1 The SWW region is rich in habitat species and diversity, with priority species that include otters, dormice, cirl bunting and several species in decline. There is a large stretch of coastline in the SWW region, which supports a wide range of wetland, coastal and estuarine habitats and species. Priority habitats make up 18% of the SWW region equating to a total of 206,581ha. There are 58 designated sites for nature conservation within the SWW region including 41 Special Areas of Conservation (SACs), 11 Special Protection Areas (SPAs) and six Ramsar sites. There are 279 Sites of Special Scientific Interest (SSSIs), 17 National Nature Reserves (NNRs) and 63 Local Nature Reserves (LNRs). Marine designations include 48 Marine Conservation Zones (MCZs) and there are 27 Shellfish Waters Protected Areas within the SWW region.

Water

5.2.2 Bournemouth and the Isles of Scilly are two areas within SWW's coverage that are classed as regions with serious water stress, with the regions of Devon and Cornwall still experiencing pressure on water resources. Additional water stress is anticipated as a result of climate change alongside population and economic growth. The South West and South East River Basin Districts (RBDs) make up the SWW region. The achievement of 'Good' status under the WFD Directive in both RBDs is commonly affected by pollution from rural areas (e.g. nitrates), pollution from wastewater and physical modifications. Furthermore, abstraction can limit flows to reach 'Good' ecological status, and cause poor status of groundwater bodies. The South West

and South East RBDs comprise individual management catchments. All waterbodies within these management catchments failed the WFD chemical status. Flood risk across the SWW region is diverse and can occur from a wide range of sources including rivers and the sea, groundwater, reservoir and surface water. Climate change is projected to increase the likelihood of extreme weather events, leading to an increased risk of flood events. An increasing population and development of hardstanding areas are likely to exacerbate these flood risks.

Soils

5.2.3 The SWW region has a strong agricultural presence, particularly in the South West, where soils are predominantly of agricultural land classification Grade 3 and 4 with pockets of urban and non-agricultural land. There are some areas of Grade 1 (excellent quality agricultural land), particularly within East Devon and on the outskirts of Devon. There is also a rich mining history and significant areas of peatland within the South West of England. There are 94 authorised landfill sites and 1,040 historic landfill sites across the SWW region.

Air

5.2.4 Air quality within the SWW region is varied and pollutants are likely associated with industrial or transport activities. Nine local authorities within the region have declared Air Quality Management Areas (AQMAs) and there are 27 AQMAs designated within the SWW region in total. AQMAs are declared where the national air quality objectives are not being met. A majority of AQMAs which fall within the SWW region are designated for Nitrogen dioxide (NO_2) and Particulate Matter (PM_{10}).

Climatic Factors

5.2.5 The Met Office UK Climate Projections (UKCP18) indicate that for the South East of England, annual mean temperatures are projected to increase by 1.8°C[37]. Average mean summer temperatures are projected to see increases of 2.4°C with extreme mean maximum summer temperatures increasing by 2.8°C. Seasonal variability in precipitation rates is projected with a 25.1% decrease during summer months and an increase of 11.6% during winter months. The total carbon dioxide (CO_2) emissions for the SWW region in 2019 are estimated to be 19,551 kilo tonnes ($ktCO_2$) (not including land use, land-use change, and forestry (LULUCF)). The transport sector contributed the highest proportion of emissions to the total in 2019 followed by the domestic and industrial sector. The LULUCF sector is estimated to be responsible for the removal of 879$ktCO_2$ equating to a 4% reduction in the total CO_2 emissions.

Population and Human Health

5.2.6 Approximately 3.1 million people live within the SWW region. Projections show that there is expected to be an increase of 300,000 people requiring a SWW supply by 2044/45. Life expectancy at birth for both males and females in the SWW region is better than the England average and against the various indicators included within the Public Health Profiles, the SWW region is generally better than the national average (indicative data), at approximately 80.3 years for males and 84.1 years for females[38]. The IMD (2019) for the Lower Super Output Areas (LSOAs) within the region are ranked from 1 to 10 with 1 being the most deprived and 10 being the least. 49% of the LSOAs in the region have an IMD ranking of over 8, 40% have a ranking of between 4 and 7 and the remaining 11% are 3 or below. Tourism is an important sector within the SWW area, attracting visitors from across the UK and internationally.

[37] Calculated using the RCP8.5 scenario at the 50th percentile against a 1981-2010 baseline.

[38] Office for National Statistics (2021) *Life Expectancy for Local Areas of the UK*. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthandlifeexpectancies/bulletins/lifeexpectancyforlocalareasoftheuk/between2001to2003and2018to2020

Historic Environment

5.2.7 The SSW region is rich in heritage with over 43,000 listed buildings, over 4000 scheduled monuments, over 100 registered parks and gardens, five registered battlefields and two UNESCO world heritage sites. The Local Authorities in the SWW region will hold a Historic Environment Record (HER) which is a database of archaeological sites, listed buildings and other historic buildings, and finds of historic objects. There is also potential for unidentified heritage assets and archaeological remains to be present within the region. Somerset is the only county within the SWW region which does not have a heritage asset identified to be "at risk". There are water-dependent heritage assets and water sensitive historic environments within the SWW region that are sensitive to changes in water levels and water quality.

Landscape

5.2.8 The landscape across the SWW region is comprised of uninterrupted views, scattered settlements and mixed agriculture, and includes the rugged coastlines of Cornwall and Devon. The region is situated within areas of high tranquillity. There are no known Green Belts situated within the SWW region. There are 18 National Character Areas (NCAs) within the SWW boundary which divide the landscape into distinct areas. There are three National Parks within the region: Dartmoor, Exmoor and New Forest. There are also ten Areas of Outstanding Natural Beauty (AONBs) located within the SWW region, which are protected to conserve and enhance their natural beauty and distinctiveness.

Material Assets (resource use and built assets & infrastructure)

5.2.9 Road transport routes within the SWW region are limited with large parts of Cornwall relying on the A30 road. The Northern areas of Devon and Cornwall are accessible to the M5 Motorway. Areas in Dorset rely on A-roads to connect to Hampshire and Wiltshire, as well as the M3 Motorway which leads from Southampton to London. Rail links within the SWW region connect rural areas, where rail travel can then be taken to Bristol and London. In 2019/2020, the total amount of local authority waste within the SWW region was 2.6 million tonnes compared with 25.6 million tonnes nationally. Incineration accounts for the most common waste disposal method by local authorities in the region.

5.3 Future Baseline

5.3.1 The SEA Regulations require that "the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the Plan or Programme" are identified. Future trends feed into the development of key sustainability issues in **Section 6.1**and the SEA framework in **Section 7.1**, for incorporation into the assessment of the potential sustainability effects of the WRMP24 options. Prediction of future trends is complex because they depend on a wide range of global, national and regional factors and decision making. Key trends have been identified and from an initial review it is likely that the following trends will continue:

- **Biodiversity, Flora and Fauna** – habitats and species are likely to continue to be protected through UK legislation. England's wildlife habitats have become increasingly fragmented and isolated, leading to declines in the provision of some ecosystem services, and losses to species populations. Lawton (2010)[39] recognises that future climate change, demographic change, economic growth, new technologies, societal preferences and changes in policy and regulatory environments may all have profound consequences[40]. The State of Nature 2019[41]

[39] Lawton (2010) Making Space for Nature. Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20130402154501/http:/archive.defra.gov.uk/environment/biodiversity/index.htm

[40] Lawton (2010) *Making Space for Nature*. Available at: https://webarchive.nationalarchives.gov.uk/ukgwa/20130402154501/http://archive.defra.gov.uk/environment/biodiversity/index.htm

[41] State of Nature Partnership (2019) *State of Nature Report*. Available at: https://nbn.org.uk/wp-content/uploads/2019/09/State-of-Nature-2019-UK-full-report.pdf

report underlines the continued decline of biodiversity resulting from intensification of land management and impacts of overfishing in marine ecosystems. However, new legislation such as the Environment Act 2021 is likely to continue the protection of biodiversity by providing a framework for a legally binding target of net gain within the planning system. This includes implementing the locally-led Nature Recovery Network throughout England to support nature regeneration.

- **Water** – As part of the WCWR Draft Regional Plan, future scenarios were modelled to review the catchments within WCWR, including the SWW region, under two "environmental destination" scenarios:
  - Business as usual (BAU), i.e. the current policy and regulatory approach remain unchanged, therefore substantial reductions in abstraction will be required to maintain the current level of environmental protection; and
  - Enhanced, i.e. climate change will have a significant reduction on flows by 2050, therefore the additional flow constraints will be imposed to offset climate change impacts and to enable the sites to meet their environmental objectives.

5.3.2 According to **Figure 6** of the WCWR Draft Regional Plan, under the BAU scenario, water available for use in the SWW region (excluding the Isles of Scilly) will fall by 146 Ml/d, and under the enhanced scenario the water available for use will fall by 189 Ml/d.

5.3.3 The WCWR Draft Regional Plan also included predictions of water availability between different emissions scenarios. The RCP6.0 probabilistic climate projections were used for the central emissions scenario, whilst the higher emissions scenario used the RCP8.5 regional climate model projections, indicating the worse-case impacts of climate change. Accordingly, the SWW WRZs (excluding Isles of Scilly), will see a reduction in water available for use of 84Ml/d by 2050 in the RCP6.0 scenario, and a reduction of 128Ml/d by 2050 in the RCP8.5 scenario.

5.3.4 Water quality is likely to continue to be maintained and improved through legislation such as the WFD and statutory requirements around Drainage and Wastewater Management Plans (DWMPs). Bournemouth and the Isles of Scilly are already water-stressed, and while Devon and Cornwall are not currently under serious water stress, 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 CO_2 emissions may increase and further contribute to climate change. The Isles of Scilly have been identified as being at high risk from climate change due to sea level rise, and boreholes used for public water supply in this area along with other coastal areas in the SWW region that are at risk from sea level rise, are at risk from climate change.

5.3.5 Changes in flow regime in the future are also important to consider, particularly as peak flows may see greater variation due to climate change. Increase in precipitation intensity and winter precipitation due to climate change could exacerbate flooding by increasing high flows. As summer flows are projected to decrease due to climate change, there could be large reductions in flows projected across the country and particularly in the south-west of England[42]. The increase in peak river flows projected for the 2080s for the South West RBD at the upper end allowance (i.e. based on the 95th percentile of possible scenarios, wherein 5% of the scenarios exceed the allowance level) range from 74% to 105%[43]. This will have severe implications on the aquatic environments as well as future water supply in the SWW region.

[42] Lane, R.A. and Kay, A.L. (2021). Climate Change Impact on the Magnitude and Timing of Hydrological Extremes Across Great Britain. [Online]. Available at: https://doi.org/10.3389/frwa.2021.684982

[43] Environment Agency (2021). *The South West River Basin District Draft Flood Risk Management Plan 2021 to 2027*. Available at:https://www.gov.uk/government/publications/south-west-river-basin-district-flood-risk-management-plan

5.3.6 In terms of groundwater, the effects of climate change in the future may reduce the rate of recharge, however the greater variability in rainfall may result in more frequent and extended periods of high or low water levels. The effects of this may include the increased frequency and severity of groundwater droughts and floods, saline intrusions in coastal aquifers, and the mobilisation of pollutants due to the seasonally high water tables[44].

- **Soils** – as the population increases it is likely that more brownfield land will be remediated and developed, due to the need for land for housing. There is potential for a loss of agricultural land through development pressures, but also intensification within agricultural land due to changing practices resulting in soil degradation. Damaged or degraded peatlands will see continued protection and restoration through local and governmental programmes, which would lead to improved carbon retention.
- **Air** – new development, economic growth and tourism may lead to increased car journeys and congestion within the area leading to localised air quality effects. Public transport improvements, electrification of railways, national air quality targets, emissions standards for new vehicles, and a shift to electric vehicles should contribute to reducing future air quality effects from motor vehicles. In addition to this, current trends show an increase in remote working following the Covid-19 pandemic, and this is likely to continue resulting in a decrease in traffic movements, and therefore continued improvements to local air quality.
- **Climatic Factors** – the climate is expected to continue to change with annual average temperatures projected to increase, particularly in summer. Winters are projected to be wetter and summers drier. Annual mean temperatures are expected to increase by 1.8°C by 2050, with annual mean temperatures in summer seeing a 2.4°C increase within the same time period. Climate change is projected to result in more extreme weather events, potentially causing or exacerbating periods of drought which alongside population and economic growth will affect water availability. Carbon and other GHG emissions will continue to be emitted, however regulations and legislation will likely continue to promote the reduction in emissions through commitments to net zero. The water industry in the UK is aiming to become net zero by 2030[45].
- **Population and Human Health** – water available for consumptive use may be affected by climate change whereby access to water is limited through more frequent droughts or floods. Population is projected to increase in the region, mirroring that of the rest of the country. Over the past 3 years, population has grown nationally at an average of 0.67% per year, and this can currently be expected to continue. This is despite the fact that population increase slowed in 2020 due to the pandemic. Life expectancy in the South West is also higher than the national average, meaning that the population of older persons in the region is likely to increase. As such, water demand is expected to increase, and further pressure will be placed on water resources within the region. When considering IMD, the number of LSOAs in the South West in the 10% least deprived areas increased between 2015 and 2019. This may suggest a trend that will continue over the next few years, with more areas within the South West moving into this bracket. During this time period however, more areas also moved into the 10% most deprived, leading to a starker economic divide between areas within the region. Community facilities, including libraries, village halls and parks, will continue to play an important role in community cohesion and sense of wellbeing, particularly within the numerous rural communities throughout the South West region.
- **Historic Environment** – In 2020 and 2021, the data collection for the Heritage at Risk findings have been impacted by COVID-19, therefore trend data has not been reported to avoid comparisons with preceding data, although desk-based assessments and updates were still undertaken. According to these assessments and updates, there are now 181

[44] UK Groundwater Forum (2011) *Groundwater Resources and Climate Change*.

[45] Water UK (2020) *Water Industry Plans to Reach Net Zero Carbon by 2030*. Available at: https://www.water.org.uk/news-item/water-industry-plans-to-reach-net-zero-carbon-by-2030/

fewer heritage assets at risk than in 2019, with successes in protecting heritage such as buildings, structures and archaeology[46]. This apparent trend in the decrease of heritage assets at risk is likely to continue and historic assets will likely continue to be protected through UK legislation. Development could however put pressure on heritage assets and their setting. Water supply and demand activities may affect historic environments, particularly those that are water-dependent. For example, waterlogged remains in areas that are dependent on groundwater may see water levels reduced as more water is abstracted, therefore reducing their preservation potential. Climate change may also put heritage assets at risk, for example through damage from storms and floods, or loss through sea-levels rising and coastal erosion.

- **Landscape** – Although national legislation (including legislation which regard interconnected topics such as biodiversity and historic environment) will likely continue to protect and enhance landscapes, the changing and continued development within the region will likely affect the quality and character of local landscapes and seascapes. The region will continue to be among the most tranquil in the UK.
- **Material Assets** – regeneration and future investment and demand are likely to increase the number and quality of material assets such as housing, transport infrastructure and waste facilities. This is likely to be exacerbated with regional population growth and subsequent requirements for additional housing and related infrastructure to support a larger population. The increase in population within the region is likely to continue and put further strain on housing and local infrastructure where demand outweighs supply and houses for local people will likely continue to be a key political focus point. Future political policies may seek to restrict or reduce the number of second and holiday homes within certain areas such as within Devon and Cornwall to reduce competition with residents.

[46] Historic England (2020) *Heritage at Risk.* Available at: https://historicengland.org.uk/advice/heritage-at-risk/findings/

6 Key Environmental Issues and Opportunities

The SEA Regulations require:

Consideration of 'any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of particular environmental importance, such as areas designated pursuant to Council Directive 79/409/EEC on the conservation of wild birds (a) and the Habitats Directive'

SEA Regulations Schedule 2 (4) (2004)

6.1 Key Issues, Opportunities and Scoping

6.1.1 A key stage in the scoping process is to determine what topics are relevant for the SWW WRMP24 SEA and what topics (if any) should be scoped out. It is considered that all the SEA Regulations topics are relevant to the WRMP24 and therefore they have all been scoped in, as presented in **Table 6.1**, which also provides an overview of the key issues and opportunities relevant to each SEA Regulations topic.

6.1.2 Topics were scoped in and assessed by reviewing baseline conditions and current environmental issues and opportunities for the SWW region and assessing the likelihood of a potential effect.

Table 6.1: Key Issues and Opportunities

SEA Topic	Scoped in	Issues	Opportunities
Biodiversity, Flora and Fauna	Yes	The SWW region is rich in habitats and species diversity, and includes national and internationally designated sites including SSSIs, NNRs, SPAs, SACs and Ramsar sites. Development of new water infrastructure can directly or indirectly affect designated and non-designated sites (such as CWS), habitats and species through loss of land, disturbance and damage. There is potential for the options within the SWW WRMP24 to result in surface and/or groundwater pollution which could have an effect on wildlife. Blanket bog, wetland and marsh habitat rely on water, and the SWW WRMP24 should ensure that it does not affect these areas through over abstraction and should look for opportunities to reduce abstraction pressure, where cost effective and possible.	The SWW WRMP24 should ensure that there are no effects on biodiversity and should look to enhance biodiversity and achieve BNG. There are opportunities to include options which result in improvements to the natural environment and BNG through habitat creation or enhancement; support Nature Recovery Networks and Strategies; increase connectivity of ecological networks to increase species resilience; and introduction of vegetation to slow run-off and reduce flood risk, amongst others. The WRMP24 should: Protect, conserve and enhance biodiversity Slow/halt biodiversity losses/declines Integrate biodiversity into new infrastructure
Water	Yes	Phosphate and physical modifications are the most common pressures affecting the achievement of 'Good' status under the WFD Directive. The significant water management issues which are most common in affecting the achievement of 'Good' are pollution from rural areas, pollution from wastewater, and physical modifications. There is potential for the options within the SWW WRMP24 to have a negative effect on water quality. Groundwater levels and quality may be affected by abstraction pressures coupled with climate change. For example, groundwater recharge may reduce due to the increased frequency of droughts, but there may be more frequent and severe groundwater-related floods due to the greater variability of rainfall. Seasonally high water tables may also increase the mobility of pollutants in	The SWW WRMP24 should avoid options which have a negative effect on water quality or ecology. Options which reduce pressures on the water environment should be explored. WFD has been considered during the optioneering process to ensure the selection of options which could lead to WFD improvements or avoid WFD deterioration, cognisant of statutory requirements to avoid deterioration risk as set out in the PR24 Water Industry National Environment Programme (WINEP) guidance documentation. It is recognised that any options that pose a deterioration risk to WFD status would not be supported by the EA. The SWW WRMP24 has the opportunity to improve the environment by leaving more water in the region's rivers, streams and underground sources. This would

SEA Topic	Scoped in	Issues	Opportunities
		aquifers. The risk of saline intrusions in coastal boreholes due to abstraction pressures and sea levels rising may, for example, reduce the water quality for public water supply. There are a high number of bathing water sites in the SWW area, the majority of which have been classified as Excellent. Pollution from wastewater poses a significant risk to bathing water quality. Areas of the region are at high risk of flooding from both surface water and rivers and the sea (e.g. River Exe, Axe and Avon areas). There is potential that the options within the WRMP24 could be affected by or contribute to an increased risk of flooding.	help maintain water levels, support water-based habitats and reduce the risk of concentration of pollutants in water bodies. The options within the SWW WRMP24 should avoid areas at high risk of flooding and, where appropriate, implement measures to reduce flood risk. The WRMP24 should: • Ensure the protection, improvement and sustainable use of waterbodies • Avoid, control or reduce water pollution • Leave more water in the natural environment • Reduce or mitigate flood risk • Support the maintenance or improvement of bathing water quality
Soil	Yes	Agriculture has a dominant role in the landscape of the SWW region. Agricultural land of Grades 3 and 4 are the most common across the region. The SWW area is dominated by two main soil types – freely draining, slightly acidic loamy soils; and slowly permeable, seasonally wet acidic loamy and clayey soils. The options within the SWW 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 and sediment contamination through the construction phase. The South West region also has extensive areas of peatland that play an important role in water retention. Peatland in the South West is an important source for SWW's water supply. The options within the SWW WRMP24 may have an effect on the peatlands' capacity	Soil is an important natural resource and as such the SWW WRMP24 should consider the effect of options on the soil stocks and avoid options which have significant negative effects. The options within the SWW WRMP24 should avoid effects on agricultural land of Grade 1 and 2 if possible, and mitigation should be included where effects are unavoidable. There are opportunities for the options to positively affect agriculture, for example options to increase raw water storage and supply. The WRMP24 should: • Promote regenerative agricultural practices • Prioritise the implementation of catchment management solutions to help manage soils, increase soil health and reduce effects of waterbodies

SEA Topic	Scoped in	Issues	Opportunities
		to retain water through damage to the peatland and moorlands during construction. Further, the SWW area has notable geological features of international importance including the Dorset and East Devon ('Jurassic') Coast UNESCO WHS and English Riviera UNESCO Global Geopark. These should be protected and enhanced where possible. In addition, there are over 90 authorised landfill sites.	• Ensure measures are taken to prevent soil erosion • Reduce nutrient loads within surface water and groundwater bodies • Peatland restoration to enhance its ability to store and release clean water and sequester carbon • Protect and enhance sites of geological importance
Air	Yes	Air quality in the region is varied. Generally, it is good, however there are nine local authorities within the SWW region that have designated AQMAs. Air pollution sources include transport and industry. The options within the SWW WRMP24 have the potential to affect 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.	There is potential for the SWW WRMP24 to mitigate any increases in air pollutants as a result of the options and improve air quality in the region. The WRMP24 should: • Improve local air quality
Climatic Factors	Yes	The SWW region 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. Sea level rise from climate change could impose a risk to coastal boreholes used to supply water to the public through rising salinity levels. Increasing sea level can also contribute to increased coastal erosion and flooding. There is also potential for options within the SWW WRMP24 to result in carbon emissions during the	The SWW region has the opportunity to consider the effects of climate change within the option selection process. Measures to increase the resilience of the option to a changing climate could also be considered. This includes the mitigation of the effects of climate change-induced sea level rise and coastal erosion as set out in the DWMP[47], as well as adapting to these changes in line with where the Shoreline Management Plans promote No Active Intervention or Managed Realignment, particularly where assets will be affected in the future by erosion rates. The options should also consider the effect on climate change through the optioneering and design processes.

[47] South West Water (2020). *Draft Drainage and Wastewater Management Plan*. [Online]. Available at: https://www.southwestwater.co.uk/siteassets/document-repository/business-plan-2020-2025/drainage-and-wastewater-management-plan.pdf

SEA Topic	Scoped in	Issues	Opportunities
		construction and operational phases which will further contribute to climate change.	The SWW WRMP24 has the opportunity to address the effects of climate change on demand for water and how much is available, and to increase the region's resilience to severe drought and other extreme events and stresses. The WRMP24 should: • Increase resilience to climate change, including the resilience of resources, infrastructure and the environment • Reduce contributions to climate change • Ensure zero net emissions • Promote nature based solutions and restore habitats to offset and sequester carbon within the SWW region, while also achieving BNG
Historic Environment	Yes	The SWW region is rich in heritage and contains many listed buildings, scheduled monuments, and registered parks and gardens, amongst others. The region also contains two UNESCO World Heritage Sites, and hundreds of Heritage At Risk sites which are sensitive to environmental change and human actions. It is also likely that most of the Local Authorities in the SWW region will have designated conservation areas. The options within the SWW WRMP24 have the potential to, directly or indirectly, effect the historic environment through changes to the asset's fabric or setting. The construction of water infrastructure and the activities under water resources management can affect heritage assets, particularly those that are water sensitive or water dependent.	The options within the SWW WRMP24 should consider the historic environment and seek to avoid any adverse effects where possible, or otherwise minimise and mitigate them. The WRMP24 should: • Protect archaeology • Careful consideration to the siting of options to reduce effects on historic assets and their setting • Encourage public awareness through promoting heritage sites, including enhancing access and enjoyment • Explore opportunities to enhance the significance of heritage assets and their setting, for example through habitat creation

SEA Topic	Scoped in	Issues	Opportunities
Landscape	Yes	The SWW region's landscape is diverse and there are numerous important landscapes within the region, including three National Parks, 10 AONBs, 18 Heritage Coasts, UNESCO World Heritage Sites, and an area designated as UNESCO Biosphere Reserve. There is potential for the options within the SWW WRMP24 to have an effect on the landscape, townscape and seascape. This could include construction effects and also effects associated with infrastructure which could affect visual amenity or the character (landscape, townscape and seascape) of the area. The SWW region also contains areas of high tranquillity, which could be disturbed by additional infrastructure associated with the WRMP24 options.	Consideration of the effects on landscape, townscape and seascape should be considered as part of the option development. There is potential for the SWW WRMP24 to enhance the landscape, townscape and seascape. This may involve selecting certain materials or colours for the option or through planting or habitat creation. The WRMP24 should: • Ensure the protection of landscape, townscape and seascape characters • Avoid effects on designated landscapes and their setting, and to minimise and mitigate negative effects where avoidance is not possible • Enhance landscapes, townscapes and seascapes by working with stakeholders through habitat creation, implementation of catchment-based solutions and safeguarding existing habitats
Population and Human Health	Yes	There are approximately 3.1 million people living within the SWW Region. The population of the area is expected to grow, which will likely place additional pressure on the water environment within the region. Economic growth and climate change will also add to this pressure. Growth in tourism within this region will also contribute to stresses in water demand, particularly during the summer months. Health within the region is generally good. Almost half of the SWW region falls into the least deprived areas in England, however 11% of the SWW region remains some of the most deprived in the country. The options within the SWW WRMP24 have the potential to result in disturbance effects during the construction phase. There is also potential for effects on the water or	There is an opportunity for the SWW WRMP24 to engage with the local community. The SWW WRMP24 could also look to maximise opportunities for recreation through enhancing access and the condition of the water environment, greenspaces or areas of the natural environment. Thus, improving the inclusivity of and connection to the local natural environment. The SWW WRMP24 also has the opportunity to ensure a resilient and reliable water supply for customers now and in the future, ensuring there is enough water for a growing population and to support economic growth. The WRMP24 should ensure an economically sustainable water supply for customers. This may see the economic value of water increase and require a

SEA Topic	Scoped in	Issues	Opportunities
		natural environment (as noted in the above SEA Topics) which could have effects on recreation and wellbeing due to reductions in the quality of recreational assets.	greater value to be assigned to water through increased charges and/ or seasonal water rates, where affordable. The WRMP24 should: • Prevent disturbance effects for the local community • Enhance the natural environment for recreation purposes • Improve access to the natural environment for all members of the community • Provide a resilient and reliable water supply for customers
Material Assets	Yes	The SWW region contains important transport links including roads, rail and ports which could be affected during construction works. There is also significant water and wastewater treatment infrastructure across the region. The region produces and manages a significant amount of waste, with recycling and composting the most common waste disposal method in the South West region (for local authority managed waste), followed by incineration. Approximately 15% of waste in the region is disposed of to landfill. The SWW WRMP24 has the potential to increase the use of resources such as construction materials and water treatment products, and result in the generation of waste. Depending on the disposal method, this has the potential to increase waste disposal to landfill.	The SWW WRMP24 has the opportunity to consider the use of resources within the option development and reduce the use of energy, materials and prevent waste generation. The WRMP24 should: • Reduce resource use • Minimise waste generation • Avoid effects on the transport network • Achieve required leakage reduction targets • Reduce unplanned outages

7 SEA Framework

7.1 SEA Objectives

7.1.1 A key part of the SEA Scoping process is the development of the SEA Framework. The SEA Framework forms the basis for identifying and assessing the effects arising from the implementation of the SWW WRMP24. This reflects the key sustainability issues and SWW priorities that the SEA seeks to enhance in the WRMP24.

7.1.2 An overarching set of SEA objectives have been developed, as shown in **Table 7.1** below. These are linked to the SEA Regulations topics, and have been informed by the review of policies, plans and programmes and their key requirements (**Section 4.4**); the local baseline conditions and likely future trends of the SWW region (**Section 5 and Annex 1: Appendix C**); and the key priorities for SWW. They have also been informed by a review of the SEA objectives used for WRMP19 and WRMP24 by other water companies in England.

7.1.3 Whilst the SEA objectives are presented under discrete topics, there are some overlaps between objectives with associated sub-themes. For example, the results of the HRA and WFD assessments fed into the SEA objectives for biodiversity and water.

Table 7.1: SWW WRMP24 SEA Objectives

SEA Topics	Number within summaries	SWW WRMP24 SEA Objectives
Biodiversity, Flora and Fauna	1.1	Protect and enhance designated and non-designated ecological sites
	1.2	Protect, conserve, and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity
	1.3	Reduce the spread or presence of INNS
Water	2.1	Protect and enhance the quality of the water environment and water resources
	2.2	Increase resilience and reduce flood risk
	2.3	Deliver reliable and resilient water supplies
Soil	3	Protect and enhance the functionality, quantity and quality of soils, including the protection of

SEA Topics	Number within summaries	SWW WRMP24 SEA Objectives
		sites of geological importance
Air	4	Reduce and minimise air emissions
Climatic Factors	5.1	Reduce embodied and operational carbon emissions
	5.2	Reduce vulnerability to climate change risks and hazards
Historic Environment	6	Conserve, protect and enhance the historic environment, including archaeology
Landscape	7	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity
Population and Human Health	8.1	Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing
	8.2	Maintain and enhance tourism and recreation
Material Assets	9.1	Minimise resource use and waste production
	9.2	Avoid negative effects on built assets and infrastructure

7.2 Assessment Criteria

7.2.1 Assessment guide questions have been produced for each of the SEA objectives. These are used to guide the SEA assessment to ensure that the same factors are considered by all assessors. **Table 7.2** below presents the assessment guide questions that form the assessment framework for the options and WRMP24 assessment.

7.2.2 This is supported by the detailed Assessment Scoring Criteria in **Annex 1: Appendix E**. This sets out how the scale of effect is determined for each SEA objective. It also specifies key datasets used for the assessment of each objective.

7.2.3 This SEA framework has then been used to assess the WRMP24 options and the preferred and alternative programmes.

Table 7.2: SEA Assessment Guide Questions

SEA Topic	SEA Objective	Assessment Questions/Sub-Themes
Biodiversity, flora and fauna	Protect and enhance designated and non-designated ecological sites	• Is the option likely to affect the conservation status of any SPA, SACs, Ramsar sites, SSSI or locally designated sites? • Will the option affect the marine environment, habitats and species (including Marine Conservation Zones (MCZs) and Marine Protection Areas (MPAs))?
	Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity	• Will the option affect any habitats that support legally protected species or species of conservation concern? • Is the option likely to affect blanket bogs/peat, ancient woodland, priority habitats and/or protected and priority species? • Will the option protect and enhance freshwater aquatic and habitats and species? • Is there potential for contribution to achieving 'favourable' conservation status or for creation of new priority habitats? • Is the option likely to have an effect 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? • Will the option affect Shellfish Waters or fisheries? • Will the option result in BNG?
	Reduce the spread or presence of INNS	• 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?
Water	Protect and enhance the quality of the water environment and water resources	• 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 raw water quality?

SEA Topic	SEA Objective	Assessment Questions/Sub-Themes
		• Will the option slow the flow in upper catchments and reduce soil losses to river systems? • Will the option comply with flow targets?
	Increase resilience and reduce flood risk	• 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, catchment storage etc.)
	Deliver reliable and resilient water supplies	• 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? • Is the option at risk from sea level rise and managed coastal realignment?
Soil	Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance	• Will the option affect high grade agricultural land and have an impact on food production? • 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 or sediment contamination or involve remediation? • Will the option restore peatland? • Is the option likely to affect geodiversity, including UNESCO sites and SSSIs of geological importance? • Will the option prevent nutrient loading in water bodies?
Air	Reduce and minimise air emissions	• Is the option in an air quality management area (AQMA)? • Will the option affect local air quality?

SEA Topic	SEA Objective	Assessment Questions/Sub-Themes
Climatic Factors	Reduce embodied and operational carbon emissions	• Will the option result in emission of carbon or other 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	• Is the option vulnerable to climate change effects? • Does the option include climate resilience measures? • Will the option create catchment resilience to drought?
Historic Environment	Conserve, protect and enhance the historic environment, including archaeology	• Will the option affect designated or non-designated heritage assets, sites and features? • Will the option affect the significance and/or setting of a heritage asset? • Will the option affect archaeology (including areas of archaeological potential and unrecorded archaeology)? • Will the option affect heritage assets at risk? • Will the option affect conservation areas or historic landscape/townscape areas? • Will the option avoid, minimise and mitigate adverse effects on the historic environment? • Will the option enhance the significance of heritage assets including their settings? • Will the option improve public access to, and understanding and enjoyment of, the historic environment?
Landscape	Conserve, protect and enhance landscape, townscape and seascape character and visual amenity	• Will the option protect and enhance designated landscapes and features, and their setting? • Will the option have an effect on the character of the landscape, townscape or seascape, including tranquillity and views? • Will the option create or improve green infrastructure which contributes to access to the landscape? • Will the option seek to avoid, minimise and mitigate adverse effects on landscape, townscape and seascape character? • Will the option offer opportunities for enhancement and improved public access and enjoyment?

SEA Topic	SEA Objective	Assessment Questions/Sub-Themes
Population and Human Health	Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing	• 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	• 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 or marine fisheries for recreational purposes?
Material Assets	Minimise resource use and waste production	• 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	• Will the option affect built assets and infrastructure, including transport infrastructure?

8 Environmental Assessment Methodology

8.1 Overview of Environmental Assessment Approach

8.1.1 The approach to the environmental assessments to support the SWW WRMP24 development follows the WRP Guidance and supplementary guidance. The following environmental assessments have been undertaken:

- SEA
- HRA – ToLS and AA
- WFD – Levels 1 and 2
- INNS – screening and detailed risk assessment
- NCA
- BNG

8.1.2 The results of the HRA, BNG, NCA, INNS and WFD assessments have fed into the SEA assessments for the biodiversity objectives, and the WFD assessments have informed the assessment for the SEA water topic.

8.1.3 This Environmental Report summarises the SEA process and provides a strategic-level assessment of the proposed options and plans, with no further detailed assessments undertaken at this stage. This provides a high-level initial assessment of likely risks and opportunities to help the development of the options in the draft WRMP. Residual risks for each option are subject to change in future with further detailed assessments and refinement of options. Mitigation measures are likely to be required and these will also undergo further development. This means that the scale of effects for each option currently identified in the SEA (i.e. minor/moderate/major positive or negative effects) may change in future, and adverse effects may be revised downwards as mitigation is further developed and confirmed. Any options taken forward in future for implementation would undergo further detailed review and site assessment outside of the SEA process, prior to any construction or other implementation works taking place.

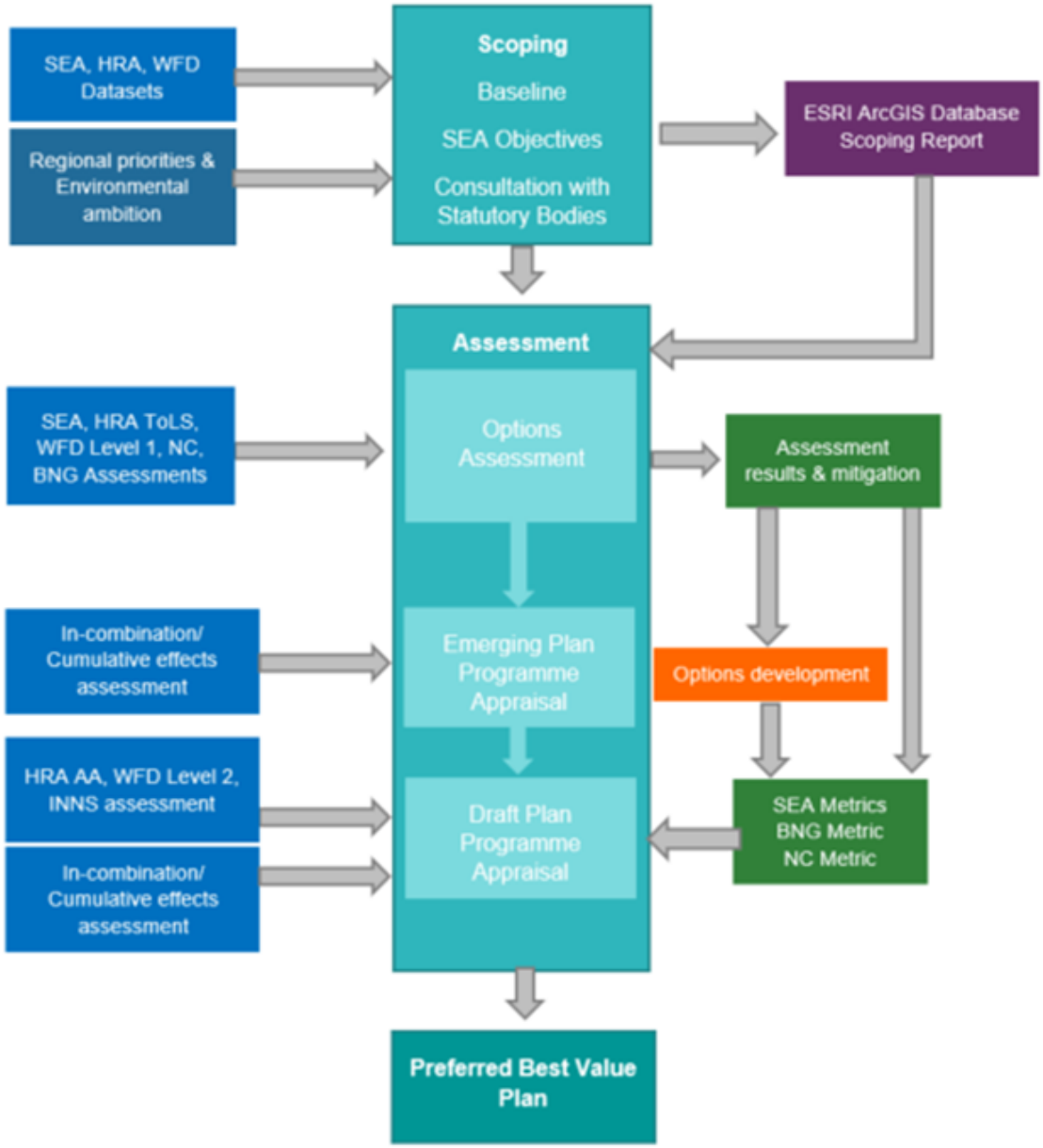
8.1.4 The proposed methodology for the assessments is outlined in the sections below. Options information has been provided by SWW, and the environmental assessments have been undertaken based on local datasets and information. SEA datasets are listed in the Assessment Scoring Criteria in **Annex 1: Appendix E**.

8.1.5 To determine the environmental effects of the options and alternatives programmes for WRMP24, the following tasks have been undertaken:

- Options level environmental assessments for proposed supply and demand options for the WRMP24; and
- Programme level environmental appraisal of the draft SWW WRMP24 (preferred adaptive plan) and the alternative programmes including cumulative and in-combination effects.

8.1.6 **Figure 8.1** presents a diagram of the overarching environmental assessment approach. It shows the key interactions between the environmental assessment and the options decision-making and plan development as part of an integrated and iterative process.

Figure 8.1: Environmental Method Integration with Options Decision-Making and Plan Development



8.2 Options Level Environmental Assessments

8.2.1 The options have been assessed using a consistent methodology. This involved assessing each option against the SEA Objectives (see **Section 7.1**) using the assessment criteria guide questions to ensure the same factors were considered by all assessors (see **Section 7.27.2**).

8.2.2 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 effects. When an option results in both positive and negative effects against different elements of a particular objective, these have not been combined. Both positive and negative effects are recorded in the assessments, and are represented as split cells showing both effects in the SEA summary tables in **Section10.**

8.2.3 Each effect in the scoring system has a Scoring Definition to provide a consistent approach to determining the level of effect. The effects of each option were assessed for each objective using this scale, and a narrative justification produced. The effects and narrative were recorded in a matrix template, with one matrix (covering all objectives) completed for each option.

8.2.4 The scoring key is summarised in An ESRI ArcGIS tool was developed to store any environmental data available as GIS datasets as part of the assessment process. This includes option locations and assets, and national and regional datasets. Local datasets (outside of the ESRI ArcGIS tool) were also included where available including County Wildlife Sites (CWS) as well as mineral and waste allocations. This tool was also used to identify the key constraints and opportunities for each option and then professional judgement was used to determine effects pre- and post-mitigation. It is noted that some information may not be as readily available as the GIS datasets, and where appropriate other data sources have been used, such as plans and information from the local councils.

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

8.2.6 Table 8.1**Table 8.1** below, alongside the scoring definitions for the biodiversity objective. The scoring definitions for all objectives are presented in full in **Annex 1: Appendix E**).

8.2.7 An ESRI ArcGIS tool was developed to store any environmental data available as GIS datasets as part of the assessment process. This includes option locations and assets, and national and regional datasets. Local datasets (outside of the ESRI ArcGIS tool) were also included where available including County Wildlife Sites (CWS) as well as mineral and waste allocations. This tool was also used to identify the key constraints and opportunities for each option and then professional judgement was used to determine effects pre- and post-mitigation. It is noted that some information may not be as readily available as the GIS datasets, and where appropriate other data sources have been used, such as plans and information from the local councils.

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

Table 8.1: Scoring Key

Effect	Description	Example Scoring Definitions – Biodiversity Objective
+++	Major Positive	The option would result in a major enhancement 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 moderate amount of creation or enhancement of habitat, promoting a major increase in ecosystem structure, function or connectivity The option would result in a major reduction or management of INNS
++	Moderate Positive	The option would result in a moderate enhancement on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures The option would result in a moderate increase in the population of a priority species Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a moderate increase in ecosystem structure, function or connectivity The option would result in a moderate reduction or management of INNS
+	Minor Positive	The option would result in a minor 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 minor increase in the population of a priority species

Effect	Description	Example Scoring Definitions – Biodiversity Objective
		Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a minor increase in ecosystem structure, function or connectivity The option would result in a minor reduction or management of INNS
0	Neutral	The option would not result in any effects on designated or non-designated sites including habitats and/or species. It will not have an effect on INNS
-	Minor Negative	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, function or connectivity The option would result in a minor increase or spread of INNS
--	Moderate Negative	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 small losses or degradation of habitat leading to a moderate loss of ecosystem structure, function or connectivity The option would result in a moderate increase or spread of INNS.
---	Major Negative	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
?	Uncertain	From the level of information available, the effect that the option would have on this objective is uncertain.

8.3 Strategic Resource Options

8.3.1 Two SROs are included in the SWW's draft WRMP24. These are the Poole Effluent Recycling & Transfer (PERT) and Mendips Quarry schemes. Both SROs are undergoing their own separate set of environmental assessments, including SEA, HRA and WFD. Preliminary environmental information is available for the SROs (from RAPID Gate 1), however the detailed environmental assessments for RAPID Gate 2 are not yet available at the time of writing. These are expected to be available for input in the final SEA Environmental Report. It should be noted that the new option (BNW17) may also become an SRO and undergo a separate assessment when information becomes available.

8.3.2 These assessments have not been duplicated here in the SWW WRMP24 options assessments, however the SRO environmental assessment teams have been engaged to ensure that high-level environmental information is captured and incorporated into this SEA. Information on the SWW WRMP24 SEA is also being shared with the SRO environmental assessors to ensure consistency in approach. A summary of environmental findings to date for the SROs is presented in **Section 9.89.8**.

8.4 Programme Appraisal

8.4.1 The programme appraisal process aims to find the 'best value' programme of supply and / or demand management options, in order to secure and maintain supply-demand balance over the WRMP24 period. A range of potential options across five WRZs have been developed for the SWW WRMP24 with the aim of selecting the preferred adaptive plan and two alternatives[48]. These plans have utilised the SEA, along with the findings of the HRA, NCA/BNG, INNS and WFD assessments to help inform the development of the draft WRMP24 preferred and alternative plans.

8.4.2 A cumulative effects assessment has been undertaken (**Section 10.510.6**) to identify if any of the preferred or alternative plan options are mutually exclusive or whether combinations of these options pose a greater adverse or beneficial effect. This assessment involved examining the likely significant effects of each of the WRMP24 options individually and alongside one another. Consideration was also given to the potential for 'synergistic' effects whereby different types of impact affecting a receptor may interact together and increase their effect.

8.4.3 While there is no standard approach, the requirements of the UKWIR guidance have been followed during the assessment. This has been used to determine the cumulative effects and the interrelationships between options. It is important to not only consider options in isolation, but also consider how the options might interact and combine generating a positive or negative effect, in order to appropriately consider all the effects of the WRMP across the SWW region, with consideration given to the potential for 'synergistic' effects whereby different types of impacts affecting a receptor may interact together and increase their effect(s). Within the WRMP24 both inter-project and intra-project cumulative effects are referred to. The definitions of these two terms are set out below.

- Inter-project effects refer to the effect of the options in combination with local planning allocations and major projects; and

8.4.4 Intra-project effects refer to the compounded effect of two or more options together on a certain feature/asset. For intra cumulative effects the ESRI ArcGIS tool has been used to help identify any interactions associated across each of the options presented within preferred plans. This is through identifying links between environmental and community features/assets across each of the WRZs.

8.4.5 The aim of the assessment was to ensure that the selected options in each of the identified plans does not result in any significant negative cumulative effects as a result of other nearby options and that opportunities to maximise positive effects across the plan as a whole are identified. The GIS platform was used to assess cumulative effects. Where more than one option is considered to have a residual (post mitigation) effect on a SEA Objective (positive or negative), these options are assessed against the SEA criteria to determine whether they would result in more significant effects using a geographical (spatial) and temporal approach using the following steps:

- Determine if there are any option clusters, where options are located in close proximity to one another;
- Identify any overlapping environmental receptors (community, ecological habitats, designated sites, historic assets, landscape or natural feature, waterbody or watercourse);
- Are the options anticipated to occur during any overlapping timeframes;
- Screen out receptors and options where there are no potential interrelationships between effects or temporal overlap of impacts, or where impacts are anticipated to be negligible; and

[48] An adaptive planning approach allows for long-term uncertainty in plan-making, with consideration of different preferred solutions. See Environment Agency (2020) *Long-Term Water Resources Environmental Destination*.

- Assess cumulative effects between remaining receptors and options. Reporting on an option by option basis (within WRZs and wider SWW region), to determine if these options pose any potential of cumulative effects.

8.4.6 Where options are identified to pose a potential for cumulative effects a narrative has been provided (**Section 10.5**), to demonstrate how this score has been determined. Where residual localised effects remain, these have been captured and noted as to why these do not pose any potential for further cumulative effects.

8.4.7 Professional judgement, following the SEA framework, is used to determine the significance of effects identified; neutral, minor, moderate or major positive or negative. A narrative explaining the significance of effects accompanies the score. In the case that further negative effects are identified, additional mitigation measures have been investigated, or alternative options explored in further detail in order to minimise any affects associated with the WRMP24.

8.4.8 For cumulative inter effects, a high level assessment has been undertaken based on the maturity of the scheme and the scale of the proposed development. A detailed review of relevant plans, programmes and/or projects such as Local Development Plans that may be undertaken in conjunction with the SWW WRMP24 options and pose a significant risk of increased adverse cumulative effects have been undertaken and consideration to potential increased effects identified.

8.4.9 Due to the levels of available information and timeframes, a high level approach has been taken using professional judgements to identify any potential developments and no in-depth mapping has been undertaken at this stage.

8.4.10 Following the completion of the NCA and BNG assessment (**Annex 4: Appendix J**), BNG opportunities are currently being investigated and assessed to develop a plan that delivers environmental net gain. The WRMP24 also aims to support the recovery and enhancement of biodiversity according to opportunities and priorities identified in relevant Local Nature Recovery Strategies and contribute to Nature Recovery Networks, in line with the Environment Act 2021. The further BNG opportunities assessment will therefore identify potential enhancements to link with and deliver gains that support Nature Recovery Networks, to help deliver environmental net gain for WRMP24.

8.5 Effects outside the SWW boundary

8.5.1 There is potential for effects outside the SWW region, for example, from transfer of water from outside the area, or from options close to the plan boundary with potential pathways affecting receptors outside the plan area. It is likely that SROs will cross boundaries. The baseline GIS database includes environmental features beyond the plan area so that additional receptors near SWW boundaries (such as designated sites) are captured and can be included in the assessments. SROs have already undergone environmental assessment through the RAPID Gate 1 process and these assessments have been used to inform the SWW WRMP24 development.

8.6 Other Environmental Assessments' Methodology

Habitats Regulations Assessment

8.6.1 The HRA is a statutory requirement in its own right under the Conservation of Habitats and Species Regulations 2017, but also feeds into the SEA objective on biodiversity. The stages of HRA include the ToLS, AA (if required from the ToLS), and consideration of alternatives (if the AA finds that effects on site integrity cannot be adequately mitigated). See **Annex 2: Appendix H** for more detail.

8.6.2 In September 2022, the HRA ToLS has been undertaken for all options to inform the draft WRMP24 development. Informal HRA AA were undertaken where required and presented in **Annex 2: Appendix H**.

Water Framework Directive Assessment

8.6.3 The WFD assessment is a statutory requirement in its own right under the Water Environment (England and Wales) Regulations 2017, but also feeds into the SEA objective on water quality. The All Company Working Group (ACWG) developed a consistent framework for undertaking WFD assessments to demonstrate that options will not cause deterioration in status/potential of any WFD waterbodies. The assessment methodology also considers WFD future objectives to ensure the option would not preclude them from reaching good status/potential.

8.6.4 The options assessments have followed the ACWG WFD Assessment framework, which includes a Level 1 Basic Screening for Impact and a Level 2 Detailed Screening for Impact. The WFD process has been applied to the WRMP24 options in line with the ACWG guidelines. See **Annex 3: Appendix I** for more details.

8.6.5 The first stage of WFD assessment was completed for all options. Level 1 assessment followed these steps:

- Identify affected waterbodies;
- Review SRO options;
- Identify possible impacts;
- Apply ‘embedded’ mitigation measures; and
- Calculate screening score (using a 6-point scale) to ‘screen out’ waterbodies and options with no or very minor potential impacts from further assessment.

8.6.6 The second stage of WFD assessment has been completed for options that were screened in at Level 1. (**Annex 3: Appendix I**). WFD Level 2 assessment follows the steps:

- Waterbody scale detailed assessment of impacts to each WFD quality element for each activity proposed as part of an option;
- Assessment of data confidence level and design certainty – confidence levels are assigned for each assessment, based on the quality and availability of both physical data and design information about the option at the time of assessment *(note, confidence/certainty expected to be low during this initial WRMP24 assessment and increase over time).* Where the confidence levels are medium or low, the requirements for further data or design information in order to raise this confidence level for future gates will be listed*;*
- Identification of further mitigation needs;
- Assessment of impacts after mitigation (scoring on a 6-point scale); and
- Identification of activities to improve certainty of assessment outcomes.

Natural Capital Assessment

8.6.7 The NCA involved defining and developing the natural capital baseline using open source data as described in NECR285 to generate a Natural Capital account of the stocks within the region. A NCA has been undertaken for each option, and the impact of each option on the Natural Capital stocks and indicators of condition has been reported quantitatively. The impact has been reported for construction and post-construction to give an estimation of the impact of the option’s whole lifecycle, reported in total losses and gains.

8.6.8 The results of the change in natural capital stocks inform the assessment against the ecosystem services listed below. During the initial phase of the NCA, all of the ecosystem services listed were reviewed and scoped in or out due to the geographical or socio-economic context of the

option and its zone of influence. Ecosystem services were monetised where possible. The ecosystem services used to assess the impact on natural capital included:

- Carbon sequestration (Climate regulation);
- Natural Hazard management;
- Water purification **Qualitative*;
- Water Regulation **Qualitative*;
- Biodiversity and Habitats *assessed separately through BNG (see below);
- Air pollutant removal;
- Recreation & amenity value; and
- Food production.

8.6.9 See **Annex 4: Appendix J** for further details.

Biodiversity Net Gain Assessment

8.6.10 BNG or net loss must be considered at both the option and programme level. Each option should look to maximise BNG, and any required mitigation should be included in the option cost. The Water Resources Planning Guideline supplementary guidance states that if there were to be a significant additional cost for an option to get significant extra benefit, this could be included as a separate option for consideration.

8.6.11 A biodiversity baseline was developed using spatial datasets of habitats inventories and assessed in line with the DEFRA BNG metric 3.1, which was used to calculate BNG change through land use of each option. The Natural Capital account was used to identify the biodiversity value of the footprint of each option prior to construction. The post-construction land use including agreed mitigation was then used to calculate the post-construction biodiversity score for each option.

8.6.12 See **Annex 4: Appendix J** for further details.

Invasive Non-Native Species

8.6.13 The INNS assessment is a two-stage process, with an initial screening, and a more detailed risk assessment for the options which identify potential INNS risks. The Level 1 screening methodology is based on the concept of risk as the product of the frequency and severity of INNS being transferred as the result of a water resource management option. Therefore, the methodology involves an assessor determining a Frequency of Impact and Severity of Impact which are combined to give an overall Magnitude of Risk. All options were screened at INNS Level 1.

8.6.14 The tasks in the INNS assessment include: i) identify species present, ii) identify relevant pathways, iii) identify specific source pathway receptors, iv) assessment of risks.

8.6.15 The results of the INNS assessment feed back into the SEA process under the biodiversity objective. For those assets or raw water transfer scenarios determined as high risk for the potential spread of INNS, a mitigation options appraisal has been conducted. This involves reviewing known mitigation technologies and determining their effectiveness with regard to species type, transmission pathway and feasibility. Where existing INNS assessments have been undertaken by SWW, these findings have been drawn upon as part of this process. See **Annex 5: Appendix K** for further details.

8.6.16 The Level 2 assessment methodology utilised the Strategic Resource Option (SRO) Aquatic INNS Risk Assessment Tool (SAI-RAT) developed by APEM Ltd on behalf of the Environment

Agency (EA) to quantify the INNS risk associated with each option, based on the conceptual design information currently available.

8.6.17 The SAI-RAT requires a significant amount of information about options to be entered in order to assess the level of risk. As WRMP24 options are in an early stage of conceptualisation, the full range of information was not available for WRMP24 options. It is likely that a failure to complete fields in the absence of information would result in the general under-estimation of risk. Therefore, an alternate approach was adopted for the assessment of INNS risk for non-SRO WRMP24 options. This approach takes used pre-determined default values for criteria where information is not yet available. Appropriate default 'assumed values' were agreed during a workshop in June 2022 attended by water companies undertaking INNS risk assessments for WRMP24, and assessors working on their behalf.

8.7 Influencing the development of the SWW WRMP24

8.7.1 As presented in the method sections above, the SEA and other environmental assessments are an ongoing and iterative process throughout the WRMP24 development. However, there are some key decision-points for influencing the plan:

- **WRMP24 options assessments and options design** – The detailed option assessments assess the positive and negative environmental effects of each option, and identify possible mitigation and enhancement measures that have been communicated to the options 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 have also been considered with the design teams. The assessment criteria also informed designs as they were being developed, ensuring the rationale used for the SEA are considered upfront in the design of the options to maximise environmental benefits and minimise adverse environmental effects. This provided opportunity for the SEA process to influence the design of the options at their early stages.
- **WRMP24 programme development and appraisal** – the results of the environmental assessments were fed into the selection of programme options through both modelling and metrics and SWW decision-making. These were used to help select the best value plan and alternatives, directly using the findings of the assessments to select these programmes. Individual options within them are then reviewed and the cumulative effects assessed. Where major or moderate negative cumulative effects are identified, additional mitigation will be needed or alternative options or programmes will need to be considered. Opportunities to maximise programme-wide benefits are also considered.
- **Cumulative and in-combination effects of the preferred plan and alternatives** – appropriate plan-wide mitigation and enhancement opportunities will be developed to support overall environmental net gain.

Modelling Inputs

8.7.2 The outcomes of the environmental assessments were used in SWW's modelling for determination of the best value plan and alternatives. The assessment outputs were translated into metrics for modelling purposes using the approach set out below. These calculated metrics were solely used to enable incorporation of environmental findings into the best value plan modelling process. They were not used for any other purpose and did not form part of the SEA process or options assessment.

8.7.3 The modelling included metrics for the following, which formed four separate inputs into the SWW model:

- SEA (positive and negative short-term and long-term effects);

- BNG habitat units & NCA (environmental – includes financial metrics (carbon storage, natural hazard management, air pollutant removal and food production) and also qualitative scores (water flow regulation and water purification));
- NCA (social – recreation/amenity financial metric); and
- Carbon (embodied and operational).

8.7.4 The SWW model operated with a scale of 1 – 4, such that the metrics for each of the above inputs had to be normalised to between 1 and 4 (with 1 representing the most adverse effects, and 4 the greatest positive effects).

8.7.5 It is acknowledged that by its nature, SEA (and NCA water regulation and water purification) does not include numerical values for scoring effects. However, in order to incorporate environmental considerations directly into the SWW modelling for selection of the preferred plan, SEA metrics were developed to summarise the environmental performance of each option in numerical form. These metrics were generated solely for the programme-level modelling, which was used in combination with further reviews and selection by SWW.

8.7.6 It is noted that the results of the HRA and WFD assessments fed into other SEA objectives including biodiversity and water, and will have contributed to those metrics. Additionally, while there is consideration of carbon within the climatic factors SEA objective, this objective also assessed climate change effects and resilience. This objective has therefore been retained in the SEA modelling metrics so that climate change and resilience are not excluded from the modelling, in addition to the separate total carbon metric.

8.7.7 SEA, BNG, NCA and carbon data relating to the draft WRMP24 supply and demand options were analysed to provide each scheme with four metrics. A summary of the process for calculating the four metrics is provided below:

SEA

8.7.8 For all options, positive and negative effects were allocated a numerical score according to the following scale[49]:

- +/-1 for positive/negative minor residual effects;
- +/-4 for positive/negative moderate residual effects; and
- +/-8 for positive/negative major residual effects.

8.7.9 These values were applied to construction and operational effects for each option, in order to convert the effects to a numeric value for modelling inputs. For each option, four categories of SEA data were processed, which were:

- Short term (construction) positive: The sum of all short term positive scores;
- Long term (operation) positive: The sum of all long term positive scores;
- Short term (construction) negative: The sum of all short term negative scores; and
- Long term (operation) negative: The sum of all long term negative scores.

8.7.10 At the time of writing in December 2022, the four categories were normalised with respect to values across all of the SEA categories to allow input to the SWW model, with the lowest value receiving a 1 and the largest receiving a 4. For each scheme, the four values across the categories were then averaged. This averaged list was then normalised again with the smallest receiving a 1 and the largest receiving a 4, to enable differentiation between values in the model. This produced a single metric for each option for input into the SWW preferred plan modelling. *[Note: the modelling approach is currently under revision to allow input of positive and negative SEA modelling values separately for each option, for both short and long term.*

[49] Values selected to align with modelling undertaken by Mott MacDonald for other water companies and regions.

This is expected to better reflect the SEA findings by separating construction and operational effects, and avoiding cancelling out of positive and negative effects. The updated model is expected to be used through spring 2023 to further refine the preferred plan.]

BNG & NCA (environmental)

8.7.11 This metric comprised of three separate elements. These were:

- BNG data in numeric format (habitat units);
- NCA environmental financial metrics for carbon storage, natural hazard management, air pollutant removal and food production (£); and
- NCA qualitative effects for water flow regulation and water purification.

8.7.12 For the BNG element, the total net unit change in habitat value was normalised between 1 and 4 for each option, with the highest value receiving a 4 and the lowest receiving a 1.

8.7.13 The environmental financial NCA data was already a numeric metric (£). This was also normalised between 1 and 4 for each option, with the highest value receiving a 4 and the lowest receiving a 1.

8.7.14 NCA water purification and water regulation were in a qualitative format, and used the assessment scale from the SEA framework. The water purification and water regulation effects were therefore converted to a numeric value for modelling purposes. The same numerical scoring conversion as for the SEA was applied to water purification and water regulation to produce a value for each option (i.e. +/-1 for positive/negative minor effects; +/-4 for positive/negative moderate effects; and +/-8 for positive/negative major effects).

8.7.15 The list of values for BNG, NCA environmental financial metrics, and NCA qualitative data (water purification and water regulation) for each option were normalised between 1 and 4 with the highest receiving a 4 and the lowest receiving a 1. Any schemes missing data were assigned the average of the list of normalised values (these were identified in the metrics). This was to ensure that options which were scoped out of the BNG and/or NCA assessments were not unduly disadvantaged in the preferred plan modelling. These three elements were then averaged to produce a single NCA environmental metric for each option for input into the model.

NCA (social)

8.7.16 This metric solely included the NCA recreation and amenity financial metric. This was in numerical format (£). As above, the list of values for all options was normalised between 1 and 4, with the highest receiving a 4 and the lowest receiving a 1. Any options missing data were assigned the average of the list of normalised values.

Carbon

8.7.17 Carbon data was already in numeric format (tCO_2). For each option, assuming a 60 year design life, the total operational carbon over that period was added to the embodied carbon to obtain a total carbon value in tCO_2. The totals for each option were normalised between 1 and 4, with the lowest total carbon receiving a 4 and the highest receiving a 1. Any schemes missing carbon data were assigned the average of the list of normalised values. This was to ensure that options with missing data were not unduly disadvantaged in the modelling scores. It is anticipated that any missing data will be available for future updates of the model and preferred plan.

8.8 Difficulties and Uncertainties

8.8.1 A number of constraints were encountered during the environmental assessments. These include:

- GIS information for the options was not available directly from the SWW design team, therefore the options were digitised in collaboration with SWW. It is noted that these may not reflect the final option location for some options;
- County-level data for all parts of the SWW region were not available at the time of the assessment. However, county-level information was provided for Devon, Cornwall and Somerset, which cover the greatest proportion of the SWW options; and
- The HRA ToLS, WFD Level 1 assessments, BNG and NCA assessments, and INNS screening have been undertaken to inform the draft WRMP24 development. Informal HRA AA, WFD Level 2 assessments and INNS risk assessments have also been undertaken where feasible to support the WRMP24 development and inform the SEA findings. Due to the varying level of option development, not all options could be assessed in detail at the HRA AA, WFD Level 2 and INNS risk assessment stage for this version of the SEA Environmental Report. Please refer to the Technical Notes in **Annex 2 - 5: Appendices H - K** for additional limitations and assumptions for those studies.

9 Assessment of Draft WRMP24 Options

9.1 Introduction

9.1.1 As outlined in **Chapter 8**, a two-stage process was undertaken to determine the environmental effects of the options and preferred draft WRMP24 (and alternatives). An options level SEA assessment was undertaken for each option included within the draft WRMP24. 42 supply-side options and 15 demand options were assessed as part of this process and are presented within **Annex 6: Appendices L - Q**. Summaries for each WRZ and the demand options are presented below. **Table 8.1** and **Annex 1: Appendix E** provide the scoring system and key for the assessment of these options.

9.2 Bournemouth WRZ

9.2.1 The Bournemouth WRZ supply options comprise of:

- **BNW1**: Lymington groundwater source development and remedial works – Borehole development, existing borehole remedial works;
- **BNW3**: Wimborne transfer to Longham - licence change to the Longham licence on the Stour;
- **BNW6**: South Dorset Aquifer Recovery Scheme – ASR at Longham. Pumping and storage of water in winter months for subsequent abstraction; and

  BNW11: Christchurch WWTW IPR2 transfer to Longham Lakes – Additional treatment before pumped transfer to Longham Lakes.

9.2.2 The above options have been assessed against the SEA objectives, using the assessment criteria guide questions (see **Section 7.2)** and scoring definitions (see **Annex 1: Appendix E**) to determine the expected nature and scale of effects.

9.2.3 A summary of the effects identified when assessing the options against each objective is presented in **Table 9.1**Table 9., and discussed in the following section. Short-term (ST) construction effects and long-term (LT) operational effects are summarised separately due to the differing nature of effects.

9.2.4 A new option, BNW17 Cheddar 2 New Strategic Regional Reservoir and Transfer, has been identified as an additional option or potential SRO, however this has not yet been confirmed by SWW. This option builds upon the concept design that has been developed for the Cheddar 2 reservoir and transfer SRO Gate 2 submission to RAPID and is expected to be included in future iterations of this Environmental Report.

9.2.5 The two confirmed SROs (BNW7 and BNW8) are undergoing a separate assessment process. Preliminary findings of their sustainability effects are summarised below in **Section 9.8.**

Table 9.1: Bournemouth WRZ Summary of SEA Findings

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	ST	-	-	0	0	0	0	-	-	-	0	0	-	0	0	-	0
	LT	--	-	0	-	0	- +	0	0	-	+	0	0	0	0	-	0
BNW 3	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	0	0	+	0	0	0	+	0	0	0	0	0	0
BNW 6	ST	-	-	-	-	-	0	-	-	-	0	0	0	- ++	-	-	0
	LT	- +	- +	--	-	- +	++	0	-	-	+	0	0	+	-	-	-
BNW 11	ST	--	--	-	-	-	0	-	-	--	0	--	--	- +	-	-	-
	LT	0	- +	0	0	- +	++	0	-	-	- +	0	0	0	0	-	0
BNW17	ST	Information not currently available for assessment – possible SRO															
	LT	Information not currently available for assessment – possible SRO															

BNW short-term (construction) effects

9.2.6 There have been no major positive short-term (construction) effects identified for options within Bournemouth WRZ.

9.2.7 One moderate positive short-term effect has been identified for Bournemouth WRZ. This is for BNW6 with respect to the population and health objective to (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". This effect is anticipated due to the substantial capital costs required for delivering the option, which could lead to significant benefits to the economy during construction.

9.2.8 One minor positive short-term effect has been identified for Bournemouth WRZ, for BNW11 in relation to the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". This is predominantly caused by the substantial cost of the option, with expected economic benefits. These include potential employment opportunities and local materials and resources supply chain opportunities.

9.2.9 Potential moderate negative short-term effects have been identified for BNW11 for the biodiversity objective (1.1 and 1.2) to "*protect and enhance designated and non-designated ecological sites*" and "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". These potential negative effects are attributed to outfall points being constructed within designated and non-designated sites and the anticipated loss of habitats due to clearance.

9.2.10 Potential moderate negative short-term effects have been identified for BNW11 for the climate objective (5.1) to "*reduce embodied carbon emissions*", largely due to the total embodied carbon from construction which is estimated to be over 2,000 tCO_2 equivalent for each option. Whereas all options are anticipated to have a neutral short-term effect in relation to the climate objective (5.2) to "*reduce vulnerability to climate change risks and hazards*", likely as a result of the negligible effects of short-term construction emissions of plant and/or pipeline infrastructure.

9.2.11 Potential moderate negative short-term effects have been identified for BNW11 in relation to the historic environment objective to "*conserve, protect and enhance the historic environment, including archaeology*" regarding the potential for these options to affect the setting of, or prevent access to listed buildings and scheduled monuments, as well as the potential effect on below-ground remains.

9.2.12 BNW11 has the potential for moderate negative short-term effects in relation to the landscape objective to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" regarding potential effects on visual amenity. These identified effects relate to the requirement for excavation related site works for the five options.

9.2.13 Potential minor negative short-term effects have been identified for all options, except for Option BNW3, in relation to the soil objective to "*protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*". These negative effects relate to the nature of the construction works for all options, which creates the potential for contamination to soil from accidental mechanical oil leaks and spillage of fuels and chemicals related to these activities.

9.2.14 Potential minor negative short-term effects have been identified for all options for the air quality objective to "*reduce and minimise air emissions".* These minor negative short-term effects were identified due to the potential for dust and pollutant release from construction plant and vehicles.

9.2.15 Potential minor negative short-term effects have been identified for all options in relation to the material assets objective (9.1) "*to minimise resource use and waste production*". This is likely

due to energy consumption during the construction phase and the use of new resources and materials.

9.2.16 Potential neutral short-term effects have been identified for all options in relation to the water objective (5.3) to "*deliver reliable and resilient water supplies*". This is anticipated due to the likelihood that water supply would not be affected during construction.

9.2.17 There have been no major negative short-term effects identified for options within the Bournemouth WRZ.

BNW long-term (operational) effects

9.2.18 There have been no major positive long-term (operational) effects identified for options within the Bournemouth WRZ.

9.2.19 Two options, BNW6 and BNW11, have been identified as having potential moderate positive long-term effects in relation to water objective (2.3) to "*deliver reliable and resilient water supplies*". This is entirely due to the options providing additional water supplies to the Bournemouth region.

9.2.20 Various potential minor positive long-term effects have been identified for the Bournemouth WRZ, in relation to the biodiversity objective (1.1) to "*protect and enhance designated and non-designated ecological sites*". These include option BNW6 which could result in the recharging of the aquifer, leading to positive effects on GWDTEs. Whereas option BNW11 is predicted to increase the surface water flow which could positively enhance the surrounding area's wildlife.

9.2.21 Potential minor positive long-term effects have been identified for options BNW6 and BNW11 in relation to the biodiversity objective (1.2) to "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". The potential for groundwater and discharge back into rivers as part of some of the options is expected to enhance GWDTEs.

9.2.22 Potential minor positive long-term effects were identified for options BNW6 and BNW11 in relation to the water objective (2.2) to "*increase resilience and reduce flood risk*". These potential effects are predominately identified due to the scale of abstraction proposed for some options resulting in positive effects in relation to groundwater flooding, and some options reducing overland flows and run-off.

9.2.23 Potential minor positive long-term effects were identified for options BNW1 and BNW3 in relation to the water objective (2.3) to "*deliver reliable and resilient water supplies" due to the options* seeking to provide additional water resources to the region. A potential minor positive effect has been identified for option BNW1 in relation to the soil objective to *"protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*", due to the option being located on a brownfield site.

9.2.24 Potential minor positive long-term effects were identified for options BNW1, BNW3, BNW6 and BNW11 in relation to the climate objective (5.2) related to "*reducing vulnerability to climate change risks and hazards*". This is expected due to appropriately monitored abstractions having the potential for positive effects on climate resilience, particularly in periods of low rainfall.

9.2.25 Potential moderate negative long-term effects have been identified for Bournemouth WRZ regarding option BNW6 which relates to the biodiversity objective (1.3) to "*reduce the spread or presence of INNS*". These potential effects are in relation to the transfer of untreated water as part of the option which could lead to an increase in the presence of INNS.

9.2.26 Various potential minor negative long-term effects have been identified across all BNW options, with the exception of BNW1 which is predicted to be neutral. The potential effects in relation to

the air quality objective to "*reduce and minimise air emissions*", are anticipated due to infrastructure such as WTWs operating over longer and more regular durations, leading to a potential increase in air emissions.

9.2.27 Potential minor negative long-term effects have been identified for all options in relation to the climate objective (5.1) "*to reduce embodied and operational carbon emissions*". These potential effects are anticipated as a result of additional treatment and/or pumping, which could lead to an increase in energy use and carbon emissions.

9.2.28 Potential minor negative long-term effects have also been identified for all options regarding the material assets objective (9.1) "*to minimise resource use and waste production*", in response to the potential for an increase in energy consumption to accommodate the additional treatment, abstraction and/or pumping of water.

9.2.29 Potential neutral long-term effects have been identified for all options for the historic environment objective "*to conserve, protect and enhance the historic environment, including archaeology*". These effects have been identified due to the options either being located within existing water treatment sites or due to the nature of the proposed works being unlikely to affect the enhancement or enjoyment of heritage assets and their settings.

9.2.30 All options have been identified as having the potential for neutral long-term effects for the material assets objective (9.2) to "*avoid negative effects on built assets and infrastructure*", with the exception of BNW6, which was assessed as minor negative, due to the potential risk of soil heave from aquifer recharge on existing built infrastructure. The neutral long-term effects are largely anticipated as the options are expected to be located within existing water treatment sites or would utilise existing infrastructure.

9.2.31 Potential neutral long-term effects have been identified for all options in relation to the soil objective "*to protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*". Neutral long-terms effects on soil resources are likely due to the location of the options which occupy previously disturbed land and also due to the implementation of best practice measures, including soil reinstatement upon operation.

9.2.32 There have been no major negative long-term effects identified for options within the Bournemouth WRZ.

9.3 Colliford WRZ

9.3.1 The Colliford WRZ supply options comprise of:

- **COL2:** Colliford Pumped Storage Stage 2 – Lower River Camel Abstraction - New abstraction licence. New river intake and pumping station at Nanstallon, for 90Ml/d at 120m head. 15km of 900m diameter pipeline from the intake to Restormel WTW. Upgrade to existing Restormel WTW intake to pump 110Ml/d (an increase of 15Ml/d). Raw water is then pumped to Colliford Reservoir via existing main.
- **COL3:** Abstraction of Colliford Reservoir compensation flows when making supply releases.
- **COL4:** Abstraction of Siblyblack Reservoir compensation flows when making supply releases.
- **COL5:** Changes to River Cober Wendron and Stithians Reservoir abstraction licences – Increase Wendron annual licence and de couple from Stithians.
- **COL6:** River Hayle new surface water abstraction (approximate yields of 1-2Ml/d) – Abstraction from River Hayle at existing disused intake, treat abstracted water at new onsite treatment works.
- **COL9:** Abstraction from Lewsidden Pool – Transfer of former quarry water to Drift Reservoir via Sancreed stream. Distance from Leswidden Pool to Sancreed Stream (5km estimate).

- **COL11:** Hawk's Tor Pit – Transfer to Colliford Reservoir.
- **COL12:** Stannon Water daily abstraction licence increase – Increase to the daily limit to the abstraction licence of 4Ml/d to 8Ml/d for up to three months in any one year. Pumps to be uprated and possible power upgrade. A 0.2Ml/d stream support facility will be constructed discharging from the lake to the adjacent stream.
- **COL15:** Increase Restermol WTW capacity to 110Ml/d – Increasing Restormel WTW up to its maximum licensed abstraction and enable more effective use to be made of Colliford/ River Fowey resources system.
- **COL18:** Re-use of Porth Reservoir and Rialton intake – New intake structure required at Rialton. RWPS and pipeline to Coswarth SRES (service reservoir) site. Building new WTW at Cosworth SRES site to treat river water of approximately 6Ml/d, and connection to existing distribution system.
- **COL19:** Re-introduce Boswyn Stream/ Cargenwen Reservoir/ Carwynnen Stream.
- **COL20:** New River Fal surface water abstraction (approximate yield of 25Ml/d) – New abstraction on the River Fal near Lanihome. New intake, onsite WTW and connection to distribution system.

9.3.2 The options outlined within paragraph 9.3.1**9.3.1** have been assessed against the SEA objectives, using the assessment criteria guide questions (see **Section 7.2**) and scoring definitions (see **Annex 1: Appendix E**) to determine the expected nature and scale of effects.

9.3.3 A summary of the effects against each objective is presented in **Table 9.2**, and discussed in this section. Short-term (ST) construction effects and long-term (LT) operational effects are summarised separately due to the differing nature of effects.

Table 9.2: Colliford WRZ Summary of SEA Findings

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health			Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1		8.2	9.1	9.2
COL 2	ST	-	-	-	-	-	0	0	0	--	0	0	-	-	+	-	-	-
	LT	--	--	-	--	-	++	0	0	--	-	0	0	+		-	-	0
COL 3	ST	0	0	0	-	0	0	0	0	0	0	0	0	0		0	0	0
	LT	-	-	0	--	0	+	0	0	0	-	0	0	0		-	0	0
COL 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
	LT	-	-	-	--	0	+	0	0	-	-	0	0	0		-	0	0
COL 5	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
	LT	-	-	-	--	0	+	0	0	-	-	0	0	+		-	0	0
COL 6	ST	-	-	-	-	-	0	-	-	--	0	0	-	-		-	-	-
	LT	-	-	-	--	-	+	-	0	-	+ -	0	-	+		-	0	0
COL 9	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	0	-
	LT	-	-	-	-	-	+	0	0	-	0	0	0	+		0	0	0
COL 11	ST	-	--	-	-	-	0	0	0	--	0	-	-	-		-	-	-
	LT	-	-	-	-	+	+	0	0	-	0	-	0	0		0	0	0
COL 12	ST	0	-	-	0	-	0	0	-	0	0	0	-	-	+	-	-	-
	LT	-	-	0	-	0	+	0	0	-	0	0	0	+		0	0	0
COL 15	ST	0	0	0	0	-	-	0	-	--	0	-	-	-	+	-	-	0
	LT	-	-	0	--	0	+	0	0	-	+	0	-	+		-	-	0
COL 18	ST	0	-	-	-	0	0	0	-	--	0	0	-	-	+	-	-	-
	LT	0	-	-	--	-	+	0	0	-	-	0	-	+		0	0	-
COL 19	ST	-	-	-	-	0	0	0	-	-	0	-	-	-	+	-	-	0
	LT	-	-	-	--	0	+	0	0	-	-	0	0	+		-	0	0
	ST	-	--	-	-	-	0	-	0	--	0	-	-	-	+	-	-	-

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
COL 20	LT	-	-	-	--	+	+	0	0	-	-	0	-	+	-	0	0

COL short-term (construction) effects

9.3.4 No major or moderate positive short-term (construction) effects have been identified for the 12 options within Colliford WRZ. There have also been no major negative short-term effects identified regarding these options.

9.3.5 A potential minor positive short-term effect has been identified for COL15, COL2, COL9, COL12, COL18, COL19 and COL20 in relation to the population and health objective (8.1) of "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". This has been identified as a potential minor short-term effect due to the substantial economic costs of the option, which could result in potential job creation as well as resource and supply chain positive impacts on the local community.

9.3.6 Potential moderate negative short-term effects have been identified for options COL 11 and COL20 in terms of the biodiversity objective (1.2) to "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". Potential effects on this objective have been identified for COL 11 as a result of the potential for direct encroachment, and therefore likely permanent loss, of areas of lowland heathland, upland heathland and fragmented heath priority habitats. Potential moderate negative short-term effects on this objective have been identified for COL 20 as a result of the potential for direct encroachment, and therefore likely permanent loss, of areas within Lamorran Wood and Ruan Lanihorne Ancient Woodland.

9.3.7 Potential moderate negative short-term effects have been identified for COL2, COL6, COL11, COL15, COL18 and COL20 in relation to the climatic factors objective (5.1) to "*reduce embodied carbon emissions*". These effects relate to the potential for the option to require the use of activities to increase the maximum abstraction, which may involve the use of energy dependent machinery. The embodied carbon emissions (total embodied carbon from construction) for options COL2, COL6, COL15, COL18 and COL20 are predicted to be over 1,000 tCO_2 equivalent. The embodied carbon emissions (total embodied carbon from construction) for option COL11 are predicted to be over 800 tCO_2 equivalent.

9.3.8 Options COL2, COL6, COL9, and COL19 are identified as having the potential for minor negative short-term effects for all biodiversity objectives due to the options requiring direct river abstractions and/or are located adjacent or nearby to designated sites, including SSSIs, SACs and SPAs. Potential minor negative short-term effects were identified for all options, for at least one biodiversity objective with the exception of options COL11 and COL20 which has the potential for moderate negative short-term effects in relation to protecting, conserving and enhancing biodiversity (1.2).

9.3.9 Options COL2, COL6, COL9, COL11, COL12, COL15, COL18, COL19 and COL20 were assessed as having potential minor negative short-term effects for both population and human health objectives, likely due to disruption to road users, access issues and effects related to construction traffic movements, such as increased dust, noise and vibration.

9.3.10 Potential neutral short-term effects were identified for both the soil and air objectives for half of the options, with the exception of COL6, COL9, COL12, COL15, COL18, COL19 and COL20, which were all assessed as having potential minor negative effects. The potential neural short-term effects are due to some options not requiring physical construction works and/or best practice mitigation measures being recommended for implementation during construction.

9.3.11 Potential neutral short-term effects were identified for the historic environment objective "*conserve, protect and enhance the historic environment, including archaeology*", for the majority of the options, with the exception of COL9, COL11, COL15, COL19 and COL20, which were all assessed as having the potential for minor negative effects. The neutral short-term effects are likely due to some options not requiring physical construction works, or the

implementation of best practice mitigation measures and additional baseline collection and assessment, being recommended for options with construction works.

9.3.12 Many options were assessed as having potential neutral short-term effects for at least one of the material assets objectives, with the exception of COL2, COL6, COL11, COL12, COL18 and COL20, which were all assessed as potential minor negative. The potential for neutral short-term effects were primarily caused by some options as they do not require physical construction works, and recommended mitigation such as investigating the use of renewable energy sources for options involving water treatment works and pumping stations.

9.3.13 Options that were assessed as having potential neutral short-term effects on the landscape objective, "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*", which were COL3, COL4 and COL5, do so as they do not require construction of infrastructure, and are therefore unlikely to affect any landscape receptors. The following options however have potential to result in minor negative effects COL2, COL6, COL11, COL12, COL15, COL18, COL19, COL20 and COL9 which has a moderate potential for negative short-term effects.

COL long-term (operational) effects

9.3.14 There have been no potential major positive or major negative long-term (operational) effects identified for options within the Colliford WRZ.

9.3.15 A potential moderate positive long-term effect has been identified for option COL2 against the water objective (2.3) to "*deliver reliable and resilient water supplies*", due to the option providing an additional water for use within the SWW region.

9.3.16 Potential minor positive long-term effects have been identified for population and human health objective 8.1 for all options within the Colliford WRZ with the exception of COL3, COL4 and COL11, due to a proposed increase in water availability across the area to support human health and wellbeing.

9.3.17 A potential minor positive long-term effect has been identified for the climatic factors objective (5.2) in relation to "*reducing vulnerability to climate change risk and hazards*" for COL6 and COL15, due to the option likely increasing catchment resilience to drought by increasing water availability to the local population. Whereas options COL2, COL3, COL4, COL5, COL18, COL19 and COL20 have the potential to result in minor negative long-term effects due to increased abstraction and impacts during periods of drought which could lead to depletion of water levels.

9.3.18 Potential moderate negative long-term effects have been identified for the water objective (2.1) to "*protect and enhance the quality of the water environment and water resources*" for COL2, COL3, COL4, COL5, COL6, COL 15, COL18, COL19 and COL20. This was largely a result of the options increasing abstraction, which has the potential to result in moderate negative impacts on WFD waterbodies.

9.3.19 Options COL4, COL5, COL6, COL9, COL11, COL19 and COL20 were assessed as having potential minor long-term negative effects for all three biodiversity objectives, with options COL2, COL3, COL12, COL15 and COL18 being identified as having potential for minor negative long-term effects for at least one biodiversity objective. The effects identified were associated with options increasing abstractions and statutory designated sites being hydrologically connected to these options, leading to an increased risk of INNS spread and increases or decreases in water levels affecting nearby habitats.

9.3.20 Potential neutral long-term effects were identified for both soil and air objectives for all options, with the exception of COL6 which has minor negative long-term effects. The neutral effects are mainly due to some options not requiring physical construction works, the recommendation that

ground will be reinstated post-construction and the low-quality grade of soil present at some option sites.

9.3.21 Potential neutral long-term effects were identified for the historic environment objective "*conserve, protect and enhance the historic environment, including archaeology*" for all options, with the exception of COL11 which has the potential to cause residual effects on scheduled monuments and Registered Common Land hence reducing the public access and the local significance within the local area. This is due to some options not requiring physical construction works and other options being unlikely to have any significant effect, enhancement or improvement on public access and/or enjoyment to heritage assets.

9.3.22 Many options were assessed as having potential neutral long-term effects for at least one of the material assets objectives. Potential neutral long-term effects were largely as a result of options utilising existing infrastructure as well as options being located away from built environments and/or involving underground structures only.

9.3.23 Most options were identified as having potential for neutral long-term effects on the landscape objective, "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*", with the exception of COL6, COL15, COL18 and COL20, which were assessed as having potential for minor negative effects, due to the options being situated within Historic National Landscape Character Areas with areas of enclosed Agricultural Land and fields therefore there is the potential for long term visual impacts as a result of new above ground infrastructure. The neutral long-term effects were due to the options requiring no physical construction works, utilising existing infrastructure, or any effects on visual amenity were expected to be negligible.

9.4 Roadford WRZ

9.4.1 The Roadford WRZ supply options comprise of:

- **ROA2:** River Erme re-location of surface water abstraction – Direct river abstraction of the River Erme, and new pumping station and additional pipework. Two possible locations have been proposed. Option ROA2a is situated within arable farmland whereas option ROA2b is proposed within the existing Ivybridge STW.
- **ROA3:** River Yealm re-location – Intake relocation on River Yealm, and new pumping station. Additional pipeline may be required to connect new intake point with existing South Devon Spine Main pipe network.

  ROA4: Abstraction of Roadford compensation flow at Gunnislake when making supply releases.
- **ROA6:** Increasing Upper Tamar Lake annual licensed volume from 6.3 Ml/d to 7.3 Ml/d – Increasing daily abstraction limit, upgrades to WTW and distribution network.
- **ROA7:** Expansion of Northcombe WTW to 60Ml/d – Treatment works to be able to deliver a minimum of 60Ml/d. and an additional 10Ml/d pumping capacity at Roadford reservoir.
- **ROA8:** Tottiford WTW – reduce WTW minimum capacity – Through source optimisation within the existing WTW, enabling the WTW to a reduced flow during periods of low demand, reserving water resources for use at time of increased demand. The source optimisation will improve control systems, principally chemical dosing, with some allowance for flow controls, isolation and ICA/SCADA improvements.
- **ROA10:** Avon WTW – Reduce WTW minimum capacity. Through source optimisation within the existing WTW, enabling the WTW to operate at a reduced flow during periods of low demand, reserving water resources for use at time of increased demand. The source optimisation will improve control systems, principally chemical dosing, with some allowance for flow controls, isolation and ICA/SCADA improvements.

- **ROA11:** Meldon WTW – Reduce WTW minimum capacity. Through source optimisation within the existing WTW, enabling the WTW to operate at a reduced flow during periods of low demand, reserving water resources for use at time of increased demand. The source optimisation will improve control systems, principally chemical dosing, with some allowance for flow controls, isolation and ICA/SCADA improvements.
- **ROA12:** Re-introduce Slade Reservoir and install additional treatment at Horedown WTW – Installation of new pumping station at Slade reservoir and new 4Ml/d GAC plant at Horedown WTW.
- **ROA13:** Dawlish groundwater sources – changes to licences, additional pumping and treatment to enable full use – Changes to abstraction licences and 4Ml/d nitrate removal plant installation at Duckaller pumping station to facilitate full use of sources.
- **ROA14:** Raise Avon Reservoir Dam – Raise Avon Dam by 2m and increase reservoir size by 50m from current reservoir edge. Subject to structural engineering approval.
- **ROA15:** Roadford Reservoir Winter Pump Storage – Gatherley Phase 2 – Pipeline from abstraction point in River Lyd to Roadford Lake Reservoir. Completion of scheme to allow 125Ml/d to be transferred to Roadford Reservoir. Dual main required between River Lyd and Roadford Reservoir.
- **ROA16:** Littlehempston WTW – Increase WTW to licence maximum (6Ml/d).

9.4.2 The above options have been assessed against the SEA objectives, using the assessment criteria guide questions (see **Section7.2)** and scoring definitions (see **Annex 1: Appendix E**) to determine the expected nature and scale of effects.

9.4.3 A summary of the effects against each Objective is presented in below in **Table 9.3**, and discussed in the following section. Short-term (ST) construction effects and long-term (LT) operational effects are summarised separately due to the differing nature of effects.

Table 9.3: Roadford WRZ Summary of SEA Findings

Option Ref	ST / LT	SEA Topics																			
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets					
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2				
ROA2	ST	-	-	-	-	0	-	-	-	---		0	0	-	-	+	-	-			0
	LT			-	--	-	--	0	+	--	0	-	-	+		0		-		0	0
ROA3	ST	-	-	-	-	0	0	-	-	-		0	0	-	-	+	-	-			-
	LT	0	-	-	-	+	-	+	-	-		-	+	0		+	-	-		0	0
ROA4	ST	0	0	0	0	0	0	0	0	0		0	0	0		0		0		0	0
	LT	-	-	-	--	0	+	0	0	-		-	+	0		0		0		0	0
ROA6	ST	-	-	-	-	--	0	0	-	-		0	0	0		-		-		-	0
	LT	-	-	+	0	-	-	-	+	0		-	+	0		0		0		0	0
	ST	-	-	-	-	0	0	-	-	-		0	0	-	-	+	0	-			-

Option Ref	ST / LT	SEA Topics																					
		Biodiversity			Water				Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets						
		1.1	1.2	1.3	2.1	2.2	2.3		3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2					
RCA7	LT	0	-	0	-	0	+	0	0	--	-	+	0	0	+	0	-	0					
RCA8	ST	--	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	LT	0	0	0	0	+	+	0	-	+	0	-	+	0	0	0	0	0	0				
RCA10	ST	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	LT	0	-	0	+	-	+	+	0	-	+	0	-	+	0	0	0	0	0	0			
RCA11	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
	LT	0	0	0	+	-	+	+	0	-	-	+	0	0	0	0	0	0	+				
RCA	ST	-	--	-	-	--	0	--	-	--	0	-	--	-	+	--	--	--					

Option Ref	ST / LT	SEA Topics: Biodiversity 1.1	1.2	1.3	Water 2.1	2.2	2.3	Soil 3	Air 4	Climate 5.1	5.2	Hist. Env 6	Landscape 7	Population and Health 8.1	8.2		Material assets 9.1	9.2		
12																				
	LT	0	- -	+	-	-	+	--	+	-	+	--	-	0	-	++	0	--	0	-	-	0
ROA13	ST	-	-	0	-	-	0	0	-	-	0	0	-	+	-	-	-	-				
	LT	-	-	-	+	+	++	--	-	0	-	+	0	0	+	0	-	0				
ROA14	ST	--	-	-	-	-	0	-	-	--	-	--	-	-	+++	-	--	-				
	LT	0	+	-	---	-	+	++	-	0	--	+	++	--	-	+	+	+	0	0		
ROA15	ST	-	-	--	-	-	0	-	-	--	-	-	-	+++	-	-	--	-				
	LT	0	-	--	- -	-	+++	-	0	-	+	-	0	-	+	+	--	0				
ROA16	ST	-	0	0	0	0	0	0	0	-	0	0	-	-	+	0	-	0				
	LT	0	0	0	0	0	+	0	0	-	-	+	0	0	0	0	-	0				

ROA short-term (construction) effects

9.4.4 Two potential major positive short-term effects were recorded for options within Roadford WRZ. These were for ROA14 and ROA15 in relation to the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". These were as a result of the construction generating positive effects on the economy of the local community, with anticipated high upfront Capex costs during construction.

9.4.5 There were no potential moderate positive short-term effects identified for the Roadford WRZ.

9.4.6 Six potential minor positive short-term effects have been recorded for options across the Roadford WRZ. These all relate to the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*", and were recorded for ROA2, ROA3, ROA7, ROA12, ROA13 and ROA16. These effects were likely as a result of the anticipated job creation and working with local suppliers for materials and resources associated with the construction of the proposed options.

9.4.7 One potential major negative short-term effect was identified for ROA2, in relation to the climate objective (5.1) to "*reduce embodied and operational carbon emissions*". This was recorded due to the anticipated increase of embodied carbon, through use of materials, the increase in vehicle movements and the use of construction equipment. Additionally, the construction works associated with this option may result in further increased emissions due to potential demolition of structures, or increased groundworks due to proposed location within a greenfield area.

9.4.8 Multiple potential moderate negative short-term effects were recorded for the Roadford WRZ, specifically in relation to ROA12, ROA14 and ROA15. The first of these relate to ROA12 with the biodiversity objective (1.2) "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*" and the soil objective to "*protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*". These effects likely arose due to the proposed works requiring the removal of deciduous woodland, priority habitat and Grade 3 agricultural land to facilitate the option.

9.4.9 Similarly, potential moderate negative short-term effects have been identified for ROA12 for the landscape objective "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*", due to construction activities (including increased vehicles movements, stockpiles and plant and equipment) being likely to affect visual amenity and local character of the rural area. In addition to this, the water objective (2.2) of "*increase resilience and reduce flood risk*", also recorded potential moderate negative short-term effects due to the site being located within Flood Zone 2 (1 in 1000 year) and Flood Zone 3 (1 in 100 year). There is also an increased risk of surface water flooding due to excavation during the construction of ROA12 and ROA6.

9.4.10 Potential moderate negative short-term effects were also recorded for ROA12 in relation to the population and health objective (8.2) "*maintain and enhance tourism and recreation*" as a result of recreational activities potentially being affected by the construction works and the potential for increased pollution of noise, vibration, dust and emissions during construction.

9.4.11 Potential moderate negative short-term effects were anticipated for ROA12, ROA14 and ROA15 for material assets objective 9.1 to "*minimise resource use and waste production*" and moderate negative effects for material assets objective 9.2 "*avoid negative effects on built assets and infrastructure*". These potential effects are anticipated to be caused by high upfront Capex costs and the consumption of significant volumes of materials as well as the production of significant quantities of waste.

9.4.12 Similarly, potential moderate negative short-term effects were also recorded for ROA14 and ROA15 in relation to the material assets objective (9.1) "*minimise resource use and waste production*", anticipated due to resources required for the options, estimated by a high level of Capex and the volume of waste generation expected.

9.4.13 Potential moderate negative short-term effects were identified in relation to the climate objective (5.1) "*reduce embodied and operational carbon emissions*" for ROA12, ROA14 and ROA15. These are anticipated due to the increase in embodied carbon and carbon emissions during construction, as these options require the construction of new infrastructure.

9.4.14 Potential moderate negative short-term effects are anticipated for ROA15 for the biodiversity objective (1.3) relating to "*reducing the spread or presence of INNS*", in response to the risk of spreading INNS from construction activities, through the use of shared equipment without appropriate cleaning and washwater discharge, for example.

9.4.15 Option ROA16 was identified as having potential for mixed minor negative and minor positive effects on the population and human health objective "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*" due to the potential mixed effects of traffic disturbance and employment opportunities created during the construction phase of this option.

9.4.16 Potential minor negative short-terms effects have also been identified for ROA2, ROA3, ROA6, ROA7, ROA10, ROA12, ROA13, ROA14, ROA15 and ROA16 for at least one biodiversity objective. In relation to the objective (1.1) "*protect and enhance designated and non-designated ecological sites*", these options have the potential to cause effects on ecological sites, as a result of construction activities including increased vehicle movements, noise and vibration and air pollution as well as the potential for contamination to ground and surface water. In relation to objective (1.2) "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*", potential effects were recorded for ROA2, ROA3, ROA6, ROA7, ROA12, ROA13, ROA14 and ROA15, due to construction works directly or indirectly affecting priority habitats. Finally, in relation to the objective (1.3) "*reducing the spread or presence of INNS*", with the potential for minor negative effects identified for ROA2, ROA3, ROA6, ROA7, ROA12 and ROA14, likely to be due to construction works taking place at existing WTWs or pumping stations, with potential for INNS spread to increase through the sharing of equipment between different sites.

9.4.17 Potential minor negative short-term effects are predicted for the water objective (2.1) "*protect and enhance the quality of the water environment and water resources*" for ROA2, ROA3, ROA6, ROA7, ROA12, ROA13, ROA14 and ROA15. These effects are mostly anticipated due to the potential for pollutants to enter watercourses during construction, particularly for those options located within a Drinking Water Protected Area.

9.4.18 Potential minor negative short-term effects have also been identified for ROA2, ROA3, ROA6, ROA7, ROA12, ROA13, ROA14 and ROA15 in relation to the air objective to "*reduce and minimise air emissions*". These are likely caused by the potential for construction works to result in an increase in dust and air emissions from the operation of plant, equipment and increased vehicle movements.

9.4.19 Option ROA16 is identified to have the potential for minor negative short-term effects regarding the landscape objective "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" material assets objective "*minimise resource use and waste production*" and climate objective (5.1) "*reduce embodied and operational carbon emissions*". These minor negative effects relate to potential temporary impacts associated with minor construction activities and option upgrades.

9.4.20 Potential neutral short-term effects have been identified for a number of options and objectives throughout Roadford WRZ. The first of these is in response to the water objective (2.3) to "*deliver reliable and resilient water supplies*", for all options apart from ROA2, which scored minor negative due to the removal and relocation of the existing intake point temporarily reducing abstraction during construction. The identified potential neutral effects are as a result of the option not requiring physical construction works as no infrastructure changes are required, or the option being unlikely to affect the water supply during construction.

9.4.21 Potential neutral short-term effects were identified in response to the historic environment objective to "*conserve, protect and enhance the historic environment, including archaeology*", for all options with the exception of ROA12, ROA14 and ROA15. ROA12 and ROA15 were identified as having potential for minor negative effects due to their proximities to designated heritage assets including various Listed Buildings and Hayne Manor Registered Battle Field respectively, which have the potential to be impacted during construction pollution (noise, dust and contamination) as well as temporary visual impacts. ROA14 has the potential to result in major negative impacts pre-mitigation due to the option encroaching the Hut Circles and two enclosures on Dean Moor, near River Avon Scheduled Monument. This has the potential to result in the loss and deterioration of the asset whilst potentially affecting the setting of this heritage asset, however this may be reduced to moderate risks after mitigation is in place. The neutral short-term effects were determined mostly due to the option involving no construction works or construction works taking place within the footprint of existing infrastructure, therefore being unlikely to directly affect heritage assets.

ROA long-term (operational) effects

9.4.22 One potential major positive long-term effect was identified for Roadford WRZ. This was for ROA15, in relation to the water objective (2.3) to "*deliver reliable and resilient water supplies*", as the additional abstraction will positively affect the resilience of the water supply in the area. Secondly, a potential minor positive effect has been identified for the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*", as a result of the estimated increase in water having a beneficial effect on the health and wellbeing of the community served by Roadford Lake Reservoir.

9.4.23 The Roadford WRZ recorded four potential moderate positive long-term effects across the options. These include moderate positive long-term effects for ROA13 and ROA14 in relation to the water objective (2.3) "*deliver reliable and resilient water supplies*". These were entirely as a result of both options are anticipated to provide additional water resources for the SWW region as a result of increased abstraction. ROA12 and ROA14 recorded potential moderate positive long-term effects in relation to the climate objective (5.2) "*reduce vulnerability to climate change risks and hazards*", due to the fact that the enhancement of provision of water resources could provide resilience against drier weather.

9.4.24 A number of potential minor positive long-term effects were recorded for the Roadford WRZ. These include at least one minor positive long-term effect for all options in relation to the water objectives, with the exception of ROA15, which was identified to have potential for one major positive effect. ROA10, ROA11 and ROA12 identified minor positive long-term effects for all three water objectives and ROA3, ROA8 and ROA13 scored minor positive long-term effects on two water objectives. Option ROA16 was identified to have potential for minor positive effects on water objective 2.3 "*deliver reliable and resilient water supplies*". These potential effects are attributed to increased resilience in the water environment or water supply in relation to the protection and enhancement of the quality of the water environment and water resources, the increased resilience and reduced flood risk and the delivery of reliable and resilient water supplies.

9.4.25 One potential minor positive long-term effect was recorded for ROA6 and the soil objective to "*protect and enhance the functionality, quantity and quality of soils*", as a result of the option being located on a brownfield site and the opportunity for land remediation. The following options have the potential for moderate negative effects ROA2, ROA12 and ROA13 with minor negative effects anticipated for ROA3, ROA14 and ROA15 as a result of permanent loss of agricultural land of varying scale and value.

9.4.26 All options are anticipated to have minor positive long-term effects for the climate objective (5.2) to "*reduce vulnerability to climate change risks and hazards*", with the exception of ROA12 and ROA14, which have moderate positive long-term effects in this aspect. These potential effects have been identified a variable increase in abstraction from each option, dependent on the option type and scale. Thus enabling the options to process more water in drier conditions as a result of increased abstraction whilst ensuring provision of water resources across the region through constructing a greater area for storage of water further increasing resilience to a changing climate creating a more reliable and efficient water supply to the region.

9.4.27 Potential minor positive long-term effects have been identified for ROA2, ROA3, ROA7, ROA13, ROA14, and ROA15 in response to the population and human health objective (8.1) "*maintaining and enhance the health and wellbeing of the local community, including economic and social wellbeing*". These are anticipated due to the potential for increasing the reliability of the water supply in the area, which will subsequently improve the wellbeing of the community.

9.4.28 One potential major negative long-term effect has been identified for option ROA14 in relation to the biodiversity objective (1.3) to "*reduce the spread or presence of INNS*". The increased water levels have potential to change the habitat suitability for any INNS present, increasing the speak of INNS, by more fragments being suspended in the water and transported to different areas of the bank.

9.4.29 Multiple potential moderate negative long-term effects have been identified across the Roadford WRZ options. These include potential effects for ROA2, ROA4 and ROA15 in relation to the water objective (2.1) "*protect and enhance the quality of the water environment and water resources*", likely as a result of deterioration of water quality and/or water levels due to over abstraction.

9.4.30 For ROA2, ROA12 and ROA13, potential moderate negative long-term effects were also identified in response to the soil objective "*protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*". These are likely due to loss of greenfield land for ROA12 and arable farmland land for ROA2 and ROA13.

9.4.31 Potential moderate negative long-term effects have been identified for ROA7 and ROA14 in relation to the climate objective (5.1) to "*reduce embodied and operational carbon emissions*". These are anticipated due to the level of carbon emissions predicted during operation of the ROA7 anticipated to be approximately 2,518tCO_2 equivalent and the likelihood of moderate energy increase during the operation of the dam for ROA14.

9.4.32 Potential moderate negative long-term effects were determined for ROA14 in relation to the historic environment objective to "*conserve, protect and enhance the historic environment, including archaeology*" and for ROA12 in relation to the landscape objective to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*". These are as a result of the anticipated loss of a portion of a Scheduled Monument and the visual impact of new above ground infrastructure, respectively.

9.4.33 Potential moderate negative long-term effects were identified for biodiversity Objective 1.2 in relation to options ROA2 and ROA12. This is due to changes in habitat as a result of new infrastructure.

9.4.34 Potential minor negative long-term effects have been identified across the Roadford WRZ. These include minor negative long-term effects for at least one biodiversity objective for all options, with the exception of ROA8. ROA11 and ROA16, which scored neutral long-term effects. The minor negative long-term effects were mostly attributed to changes in habitat or water quality as a result of increased abstraction, new infrastructure being located on greenfield land or arable land and/or new infrastructure resulting in the permanent loss of habitats.

9.4.35 Potential minor negative long-term effects have also been recorded for ROA3, ROA6, ROA7, ROA12 and ROA14 relating to the water objective (2.1) "*protect and enhance the quality of the water environment and water resources*", likely due to increased abstractions having potential to deteriorate water quality or the presence on new underground infrastructure affecting groundwater bodies.

9.4.36 In relation to the air quality objective to reduce and minimise air emissions, ROA8, ROA10, ROA11, ROA12 and ROA13 identified potential minor negative long-term effects, widely attributed to current WTW operating at an increased capacity or the construction of new infrastructure. With ROA8 and ROA10 also scoring potential minor positive long-term effects due to the potential improvements in efficiencies as an outcome of the options.

9.4.37 For most options, likely minor negative long-term effects were identified for the climate objective (5.2) "*reduce vulnerability to climate change risks and hazards*". This was largely caused by increase abstractions during periods of climate related drought creating potential for a reduction in water levels. Option ROA14 identified potential moderate positive effects for this objective related to climate change resilience for this objective all remaining Roadford options identified potential for mixed minor positive and minor negative effects related to climate change resilience and the potential for water level reduction. Option ROA16 was identified to have potential for minor negative long-term effects on climate objective "*reduce embodied and operational carbon emissions*" in relation to increased operational energy usage.

9.4.38 Potential minor negative long-term effects were identified for the landscape objective to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*", for ROA2, ROA3, ROA14 and ROA15. This is in relation to visual impacts as a result of the expansion of existing sites or the presence of new infrastructure.

9.4.39 Potential minor negative long-term effects were also recorded for ROA2, ROA3 and ROA12 in relation to the population and health objective (8.2) "*maintain and enhance tourism and recreation*" and for ROA7, ROA12, ROA13 and ROA16 relating to the material assets objective (9.1) "*minimise resource use and waste production*". These are largely caused by the potential for reductions in the water levels, quality and low rates affecting water leisure activities and due to the additional energy consumption and/or additional use of materials to facilitate the options, respectively.

9.4.40 In relation to the soil objective to "*protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*", potential neutral long-term effects were identified for all options, with the exception of ROA2 (moderate negative), ROA3 (minor negative), ROA6 (minor positive), ROA12 (moderate negative), ROA13 (moderate negative), ROA14 (minor negative) and ROA15 (minor negative). The neutral long-term effects were largely attributed to the options not requiring additional land take.

9.4.41 For all options, with the exception of ROA8, ROA10, ROA11, ROA12 and ROA13 which scored potential minor negative long-term effects, neutral long-term effects were recorded for the air quality objective "*reduce and minimise air emissions*". This was likely due to negligible increases in energy to power new or additional processes.

9.4.42 Potential neutral long-term effects have been recorded in relation to the historic environment objective "*conserve, protect and enhance the historic environment, including archaeology*" for all

options with the exception of ROA14, which was assessed as having potential moderate negative long-term effects. The neutral long-term effects were identified as such mostly due to minimal or no new infrastructure affecting views of and the setting of historic assets or paleoenvironmental remains.

9.4.43 Potential neutral long-term effects have also been identified for the material assets objective (9.2) "*avoid negative effects on built assets and infrastructure*", for all options with the exception of ROA11, which scored potential minor positive long-term effects. The neutral long-term effects are largely attributed to the option connecting to existing infrastructure or being located within an existing WTW site.

9.5 Wimbleball WRZ

9.5.1 The Wimbleball WRZ supply options comprise of:

- **WIM1:** Abstraction of Wimbleball Reservoir compensation flow when making supply releases. Downstream of abstraction point, the River Erme will have a reduced flow and there will be increased water treatment and pumping.
- **WIM2:** Sid Valley groundwater source commissioning – Equip and make operational existing borehole; pump, headworks, control and monitoring system, connecting pipework. Construction of a new groundwater source treatment system including chlorination and iron and manganese removal plant within the existing site footprint.
- **WIM4:** Umborne Brook groundwater source abstraction increase - A reduction in flow downstream in the Umborne Brook and increased water treatment / distribution. The current intake is restricted by the current licence. The licence will be varied to allow a greater volume of water to be taken over the year.
- **WIM5:** Indirect potable reuse – stream support for Dotton WTW – Pumped treated effluent from Sidmouth WWTW directly to the River Otter using a new pipeline (5km) and outfall to augment the river during low flow periods. High pumping power requirements due to a height variance in the pipeline route.
- **WIM6:** Increase Allers WWTW capacity to 36Ml/d - to cover East Devon and the east coast of East Devon in winter, with Dotton WTW at a minimum in the winter. Will require an increase in Bolham licence (winter) and a reduction in the Dotton licence (winter) – Increase daily abstraction licence to 36Ml/d and upgrade Bolham abstraction to pump additional 4Ml/d. Upgrade WTW to treat an additional 4Ml/d, with distribution network improvements.
- **WIM7:** Increase Pynes to licence limit 66.46Ml/d – Upgrade WTW to treat an additional 6.5Ml/d. The final works could include new river intake streams, raw water main pipeline replacements, installation of additional water treatment equipment, and pump replacements. There will be no distribution network changes. The WTW extracts untreated water from the River Exe. The natural river flows can be supplemented with releases from Wimbleball reservoir in the River Haddeo, a tributary of the River Exe.
- **WIM8:** Re-introduction of North Exeter groundwater source west of the Exe - Agree licence changes with EA and commission the site for use.
- **WIM9:** Re-introduction of North Exeter groundwater source east of the Exe – Agree licence changes with EA and commission the site, as well as installation of a new power supply.

9.5.2 The above options have been assessed against the SEA objectives, using the assessment criteria guide questions (see **Section 7.2 7.2)** and scoring definitions (see **Annex 1: Appendix E**) to determine the expected nature and scale of effects.

9.5.3 A summary of the effects against each objective is presented below in **Table 9.4**, and discussed in the following section. Short-term (ST) construction effects and long-term (LT) operational effects are summarised separately due to the differing nature of effects.

Table 9.4: Wimbleball WRZ Summary of SEA Findings

Option Ref	ST / LT	SEA Topics														
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
WIM 1	ST	0	0	0	0	0	0	0	0	0	0	0	0	+	0	0	0
	LT	0	-	0	--	0	-- +	0	0	-	- +	0	0	0	-	-	0
WIM 2	ST	0	-	-	-	0	0	-	-	-	0	0	0	- +	-	-	0
	LT	0	-	0	-	0	- +	0	0	-	-	0	0	+	0	-	0
WIM 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	-	0	-	0	- +	0	0	-	-	0	0	0	0	0	0
WIM 5	ST	-	-	-	-	-	0	-	-	-	0	-	--	- +	-	-	--
	LT	0	+	0	-	0	- +	0	0	-	+	0	0	-	-	0	0
WIM 6	ST	0	-	0	0	--	0	-	-	-	0	0	-	- +	0	-	-
	LT	0	-	0	-	--	+	-	0	-	- +	0	0	+	0	-	0
WIM 7	ST	-	0	0	0	-	0	-	-	--	0	-	-	- +	0	-	0
	LT	0	-	0	-	0	- +	0	0	-	- +	0	0	+	-	-	0
WIM 8	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
WIM 9	ST	0	0	0	0	0	0	0	-	-	0	-	0	+	0	-	0
	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0

WIM short-term (construction) effects

9.5.4 There have been no potential major or moderate positive short-term (construction) effects identified for options within the Wimbleball WRZ.

9.5.5 Potential minor positive short-term effects have been identified for the majority of the options, with the exception of WIM4 and WIM8, against the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". Options WIM4 and WIM8 both scored neutral for the objective this is mostly due to the options not requiring physical construction works, the location of the works being unlikely to affect active lifestyles and the potential for job creation which, in turn, could improve the local economy being of a low potential to create minor positive effects. Other options that did score for potential positive minor effects were due to job creation and the positive cascading effects upon the local economy that the construction of the option may have.

9.5.6 There were no major negative short-term effects identified for the Wimbleball options.

9.5.7 Potential moderate negative short-term effects have been identified for WIM5 in terms of the landscape objective to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*", and for the material assets objective (9.2) to "*avoid negative effects on built assets and infrastructure*". For landscape, the potential moderate negative short-term effect has been identified as the option is located within the East Devon AONB, and therefore the potential for reduced access and reduced visible amenity within AONB, and the potential for construction works to be clearly visible from nearby residential properties. For the materials asset objective, this is due to the proposed pipeline for the option intersecting a major road, the A3052, and multiple minor roads, requiring excavation works and the likely increase in construction traffic within Sidford village. There is also the potential for temporary road closures and diversions may be required for works to be undertaken.

9.5.8 Potential moderate negative short-term effects have been identified for WIM6 in relation to the water objective (2.2) to "*increase resilience and reduce flood risk*". This has been identified as the option is located entirely within Flood Risk Zone 3 and directly adjacent to the River Exe. Although mitigation measures to reduce the effects of flooding during construction will be implemented, the risk that construction runoff could increase the risk of flooding in the short-term remains.

9.5.9 Potential moderate negative short-term effects have been identified for WIM7 in relation to climate objective (5.1) "*reduce embodied and operational carbon emissions*", due to the construction of additional infrastructure resulting in an increased use of machinery, vehicles and construction materials. The use of substitute materials with lower embodied carbon should be investigated for this option, however moderate negative short-term effects would be likely to remain.

9.5.10 Potential minor negative short-term effects have also been identified for WIM2, WIM5, WIM6 and WIM9 in relation to climate objective (5.1) "*reduce embodied and operational carbon emissions*", due to additional infrastructure generating increased embodied carbon emissions through the use of materials and construction activities.

9.5.11 Potential minor negative short-term effects have been identified for WIM2, WIM5, WIM6, WIM7 and WIM9 in relation to the materials assets objective of "*minimising resource use and waste production*", again, due to the use of new resources and production of waste material.

9.5.12 Potential neutral short-term effects have been identified for all options, except WIM5, WIM7 and WIM9 which were assessed as minor negative effects in response to the historic environment objective to "*conserve, protect and enhance the historic environment, including archaeology*" this is a result of these options not requiring any physical construction works. For those options

with construction activities, due to the asset being screened by surrounding vegetation or buildings or having works taking place within previously disturbed ground and therefore limiting the potential to disturb buried archaeology there is a potential for minor negative short-term effects.

9.5.13 Potential neutral short-term effects have been identified for all options except WIM5 and WIM7 which scored minor short-term negative effects, and WIM6 which scored moderate negative short-term effects, in relation to the water objective (2.2) for "*resilience and reducing flood risk*", with neutral effects mostly being due to construction activities being unlikely to increase risk of flooding due to the location of the sites and the nature of the works being undertaken.

WIM long-term (operational) effects

9.5.14 There have been no potential major or moderate positive long-term (operational) effects identified for options within the Wimbleball WRZ.

9.5.15 Potential minor positive long-term effects have been identified for all options for the population and health objective (8.1) to "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*" except for WIM1 and WIM4 (neutral) and WIM5 where a potential minor negative impact was identified. These potential minor positive effects were identified as the options would be increasing water availability across the areas and are expected to result in low or moderate Opex costs. WIM5 has been recorded as minor negative due to the potential for negative reputational effects in the local community for pumping treated effluent into the River Otter. WIM1 and WIM4 scored neutral due to the very minimal ongoing Opex costs needed for the operational phase of the option.

9.5.16 Options WIM5, WIM8 and WIM9 are expected to result in potential minor positive long-term effects on biodiversity, in relation to the objective (1.2) "*protect, conserve and enhance biodiversity including priority species, vulnerable habitats and habitat connectivity*". This is due to an enhancement of biodiversity due to treated water being pumped into nearby river(s), a reduction in abstraction licence volumes and an increase in flow downstream from a discharge point. This has the potential to lead to minor positive long-term effects due to increased water flows during periods of drought when flows would usually be low, which for WIM5 means a sufficient water resource for the River Otter, which could in turn improve the biodiversity of the ecosystem and local area.

9.5.17 Options WIM8 and WIM9 are expected to result in a minor positive long-term effect with regard to the "*protect and enhance the quality of the water environment and water resources*" objective (2.1). This is due to both options resulting in an increase in flow downstream, which has the potential to create a minor localised improvement to water quality.

9.5.18 All options within Wimbleball WRZ have been assessed as having potential minor positive long-term effects for the water objective (2.3) to "*deliver reliable and resilient water supplies*". Due to the nature of the options, all are expected to create more resilient water supplies in the respective areas.

9.5.19 Options WIM1, WIM5, WIM6, WIM7, WIM8 and WIM9 are expected to result in a potential minor positive long-term effect in regard to the climatic factors objective (5.2) "*reducing vulnerability to climate change risks and hazards*", mainly due to the potential to slightly alleviate effects on climate change related flooding from the increased intake of water from the subsequent rivers due to increased WTW treatment works.

9.5.20 There were no major potential long-term negative effects identified for Wimbleball WRZ.

9.5.21 Two potential moderate negative long-term effects have been identified for this WRZ. Option WIM1 is expected to result in potential moderate negative long-term effects in relation to both

water objectives (2.1 and 2.3) "*protect and enhance the quality of the water environment and water resources*" and "*deliver reliable and resilient water supplies".* This is due to increased river abstraction having the potential to lead to a permanent deterioration of WFD status.

9.5.22 Option WIM6 could potentially result in a moderate negative long-term effect in relation to water objective (2.2) "*increase resilience and reduced flood risk*", due to its location entirely within Flood Zone 3. Mitigation measures to reduce the effects of flooding during operation are required, however a moderate negative long-term effect remains due to the option being located within Flood Zone 3.

9.5.23 Potential minor negative long-term effects have been identified for all options in terms of climate objective (5.1) "*reducing operational carbon emissions*", due to the assumption that all options will utilise fossil fuel sources of energy for process such as abstraction, pumping, treatment and/or distribution, and therefore increase operational carbon emissions. Opportunities for incorporation of renewable energy supplies is not yet known at this stage.

9.5.24 All options, with the exception of WIM4 scored neutral due to no new materials or construction works being required, identified potential for minor negative long-term effects in relation to material assets objective (9.1) "*minimise resource use and waste production*", which is mostly due to the increased energy outputs required to operate the facilities.

9.5.25 Potential minor negative long-term effects have been identified for all options, with the exception of WIM5 which scored both minor negative and minor negative long-term effects due to the effects outlined in 9.5.15, in relation to biodiversity objective (1.2) "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". This is due to abstraction altering river flows downstream, and therefore affecting downstream species sensitive to change, and the potential for increased use of chemicals for water treatment presenting increased risk of leakages and spillages.

9.5.26 Potential minor negative long-term effects have been identified for all options, with the exception of WIM1 which as outlined in 9.5.21 scored moderate for potential long-term negative effects, in relation to water objective (2.1) "*protect and enhance the quality of the water environment and water resources*". This is due to increased abstractions having the potential to affect groundwater or WFD bodies if over abstraction occurs and negative effects such as the lowering of the water table.

9.5.27 Potential neutral long-term effects have been identified for all options in terms of the historic environment objective "*conserve, protect and enhance the historic environment, including archaeology*", due to the options directly affecting significant historic assets or their setting and not expected to enhance public access and/or enjoyment of historic assets.

9.5.28 All options were assessed as having potential for neutral long-term effects for the landscape objective "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*" and air objective "*reduce and minimise air emissions*". This is mostly due to options being located on existing sites or existing vegetation having potential to screen views from surrounding areas onto developments and increased operational emissions having a negligible effect on air quality, respectively.

9.5.29 Potential neutral long-term effects have been identified for all options in terms of the biodiversity objective (1.3) "*reducing the spread or presence of INNS*", which is likely due to onward use of water within WTWs or sources of water, and processes of accessing it, having a very limited risk of INNS (such as groundwater abstraction).

9.6 Isles of Scilly WRZ

9.6.1 The Isles of Scilly became part of SWW's supply area in April 2020. The islands have a unique and remote location, and are not connected to the mainland water supply systems. As the Isles of Scilly came into SWW's management more recently than the remainder of the supply area, there is a smaller body of evidence and studies in place to support SWW's development of options for the islands. As a result, some of the Isles of Scilly options are not as fully developed in terms of location and detail as the other WRZs. Some of the options are therefore high-level and include broad location possibilities, meaning that the environmental assessments could not be targeted at a specific site and needed wider consideration. The assessments have taken a 'worst-case' view of the potential area for an option when the exact location is not known, to ensure that potential adverse effects are not omitted.

9.6.2 The Isles of Scilly WRZ supply options comprise of:

- **ISMY1:** St Mary's new borehole (location 1) – Drilling of new supply borehole 30m depth, 150mm diameter borehole / c. 1kW pump. Associated infrastructure (headworks, kiosk and pipework) wastewater piped via raw main (estimated 32mm diameter for 500m distance) to existing WTW. Assumes spare capacity at existing WTW.
- **ISMY2:** St Mary's new borehole (location 2) – Drilling of new supply borehole at 30m depth with 150mm diameter borehole / c. 1kW pump. Associated infrastructure (headworks, kiosk and pipework) and requiring standalone treatment, with water piped directly into supply network (estimated 32mm diameter for 500m distance).
- **ISMY4:** St Mary's – Increase Existing Desalination Plant Capacity – Additional process stream at existing RO plant. A new building to support related infrastructure would be required.
- **ISB4:** Bryher – Increase Existing Desalination Plant Capacity – Additional process stream at existing RO plant plus increased borehole yield and/or new borehole source. A new building to support related infrastructure would be required.
- **IST1:** Tresco new borehole – Drilling of new supply borehole within either the south or east of the island of Tresco. Assumed 30m depth, 0.75kW pump, 100mm diameter borehole pipework, with associated infrastructure (headworks, kiosk and pipework) and on-site treatment (assume UV disinfection) wastewater piped via new raw main (estimated 40mm diameter for 500m distance) to existing WTW.

9.6.3 The above options have been assessed against the SEA objectives, using the assessment criteria guide questions (see **Section 7.27.2)** and scoring definitions (see **Annex 1: Appendix E**) to determine the expected nature and scale of effects.

9.6.4 A summary of the effects against each objective is presented in below in **Table 9.5**Table 9.5, and discussed in the following section. Short-term (ST) construction effects and long-term (LT) operational effects are summarised separately due to the differing nature of effects.

Table 9.5: Isles of Scilly WRZ Summary of SEA Findings

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
ISMY 1	ST	-	-	-	-	0	0	-	-	-	0	-	-	-	0	-	-
	LT	0	-	0	-	0	-	+	0	0	-	+	0	-	0	0	-	0
ISMY 2	ST	-	-	-	-	0	0	-	-	-	0	-	-	-	0	-	-
	LT	0	-	0	-	0	-	+	0	0	-	-	+	-	-	0	0	-	0
ISMY 4	ST	?	?	-	-	0	0	?	-	-	0	?	-	-	-	-	-	?
	LT	?	?	-	-	0	+		0	-	-	-	+	0	-	0	-	-	0
ISB 4	ST	--	-	0	-	0	0	0	-	-	0	-	-	0	0	-	-
	LT	0	-	-	--	0	+	-	0	0	0	?	0	0	-	-	0
IST 1	ST	--	-	0	-	0	0	-	-	-	0	-	-	0	-	-	-
	LT	-	--	0	---	0	-	+	-	0	-	0	0	-	0	-	-	0

IoS short-term (construction) effects

9.6.5 There have been no potential major, moderate or minor positive short-term (construction) effects identified for options within the Isles of Scilly WRZ.

9.6.6 There have also been no potential major short-term negative effects (construction) identified for options within the Isles of Scilly WRZ.

9.6.7 Potential moderate negative short-term effects were recorded for ISB4 and IST1 for the biodiversity objective (1.1) to "*protect and enhance designated and non-designated ecological sites*". These effects were scored due to their impacts involving direct and indirect disturbance, from construction related activities including drilling, excavation works, dust and noise emissions.

9.6.8 Potential minor negative short-term effects have been recorded for a number of options and objectives within the Isles of Scilly WRZ. These include potential minor negative short-term effects for ISMY1 and ISMY2in relation to the biodiversity objective (1.2) of "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". These potential minor negative short-term effects were mostly determined due to the potential for construction runoff, dust and vibrations which may disturb priority species and habitats.

9.6.9 In relation to the air quality objective (4) "*reduce and minimise air emissions*", potential minor negative short-term effects were identified for all options as a result of the construction works generating construction dust and emissions.

9.6.10 SEA objective 6 "*Conserve, protect and enhance the historic environment, including archaeology*" has the potential to result in minor negative effects across all options with the exception of ISMY4. This is due to the options' presence in relation to historic assets. Potential minor negative short-term effects were identified for three of the options within the Isles of Scilly, WRZ, ISMY1, ISMY2 and ISMY4, in relation to the population and health objective (8.1) "maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing", mostly due to construction works affecting congestion on roads and noise and vibration affecting the local community.

9.6.11 Objective 8.2 "*Maintain and enhance tourism and recreation*" has the potential to result in minor negative effects for options ISMY4 and IST1 as a result of construction works leading to temporary impacts on recreational activities.

9.6.12 Potential minor negative short-term effects were identified across all options in response to four SEA objectives including the material assets objective (9.1) "*minimise resource use and waste production*". This was as a result of the using materials to facilitate and deliver construction works and any associated waste production. Minor negative short-term effects were also identified for the landscape objective (7), as a result construction works being located within the Isles of Scilly AONB and the Isles of Scilly NCLA. Objective (2.1) to "*protect and enhance the quality of the water environment and water resources*" was also assessed as a minor negative effect for all options due to the potential for new below-ground structures to lead to groundwater contamination, or potential for ground or surface water contamination from runoff or construction materials and plant. Minor negative short-term effects were also determined for objective 5.1 "*Reduce embodied and operational carbon emissions*" as a result of short-term greenhouse gas emissions from construction activities.

9.6.13 Potential minor negative short-term effects were identified for all options with the exception of ISMY4 in relation to materials assets objective (9.2) "*avoid negative effects on built assets and infrastructure*". This is due to potential disruption to local traffic networks during construction.

9.6.14 Potential neutral short-term effects have been recorded for all of options and objectives within Isles of Scilly WRZ. These include neutral short-term effects in response to the water objective (2.2) "*increase resilience and reduce flood risk*" for all options. This is as a result of a majority of the options being located within Flood Zone 1 and therefore the constructions works considered as having a negligible effect on flooding in the short-term.

9.6.15 Also, in relation to the water objective (2.3) "*deliver reliable and resilient water supplies*", all options were assessed as having potential neutral short-term effects, due to effective implementation of mitigation measures, or no construction works taking place that would cause adverse effects.

9.6.16 For all options within the Isles of Scilly WRZ, in relation to the climate objective (5.2) "*reduce vulnerability to climate change risks and hazards*", potential neutral short-term effects have been recorded. Overall, this is due to the fact there are currently no known climate resilience measures in place for the construction phase of options.

9.6.17 Potential neutral short-term effects have also been identified for two of the options ISB4 and IST1 in relation to the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". This is as a result of the options having no nearby receptors which are deemed sensitive to construction noise and vibrations and an increase in construction vehicles.

IoS long-term (operational) effects

9.6.18 There are no major positive long-term effects identified for options within Isles of Scilly WRZ. There is one major long-term negative effect anticipated within Isles of Scilly WRZ. There are no major positive long-term effects identified for options within Isles of Scilly WRZ.

There are no long-term moderate positive or negative effects anticipated across the Isles of Scilly WRZ.

9.6.19 Potential minor positive long-term effects have been identified for all options within the Isles of Scilly WRZ in relation to the water objective (2.3) to "*deliver reliable and resilient water supplies*". This is due to the options providing additional water for use within the Isles of Scilly region.

9.6.20 Similarly, in relation to the climate objective (5.2) to "*reduce vulnerability to climate change risks and hazards*", potential minor positive long-term effects have been recorded for options ISMY1, ISMY2 and ISMY4. These effects are due to additional abstraction and water transfer having potential to result in increased resilience to climate change.

9.6.21 Potential neutral long-term effects have been identified for all options within the Isles of Scilly WRZ in relation to the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". This is due to the small scale of construction activities required and the limited scope for local resourcing.

9.6.22 Potential major negative long-term effects were identified for IST1 in relation to the water objective (2.1) "*protect and enhance the quality of the water environment and water resources*". This is due to the increased water abstraction which may lead to a deterioration of groundwater levels and quality, and was outlined by the WFD Level 1 assessment as having potential for high level impacts on the Isles of Scilly groundwater.

9.6.23 Potential moderate negative long-term effects have been identified for option ISB4 in relation to the water objective (2.1) "*protect and enhance the quality of the water environment and water resources*". This is largely attributed to increased abstraction having potential to deteriorate groundwater level and quality, affecting GWDTEs.

9.6.24 Potential minor negative long-term effects have been identified for multiple options and objectives across the Isles of Scilly WRZ. These include options ISMY1, ISMY2 and ISB4 recording a minor negative long-term effect for the biodiversity objective (1.2) to "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". These identified potential effects are predominantly attributed to activities, such as abstraction. This has the potential to affect biodiversity in surrounding waterbodies and subsequently Priority Habitats through the reduction in water flows which may alter the environment in which these habitats are located.

9.6.25 Potential minor negative long-term effects have also been identified in relation to the water objective (2.1) "*protect and enhance the quality of the water environment and water resources*" for all options, with the exception of IST1 (potential for major negative long-term effects) and ISB4 (potential for moderate negative long-term effects). The minor negative long-term effects are attributed to a potential deterioration of groundwater quality and quantity.

9.6.26 Additionally, for all options with the exception of ISB4 which was assessed as neutral, potential minor negative long-term effects arose in relation to the climate objective (5.1) to "*reduce embodied and operational carbon emissions*". This is mainly attributed to the increase in operational energy required to facilitate the options.

9.6.27 For the material assets objective (9.1) "*minimise resource use and waste production*" all options were identified to have potential for minor negative long-term effects. The potential minor negative long-term effects were identified due to the likely energy consumption increase as a result of the options becoming operational.

9.6.28 Neutral long-term effects were recorded for a number of objectives for options within the Isles of Scilly WRZ. In relation to the biodiversity objective (1.1) "*protect and enhance designated and non-designated ecological sites*", with the exception of IST1 which was identified as having potential for minor negative effect and ISMY4 which was recorded as having uncertain long-term effects. Neutral long-term effects were largely due to abstraction yields being low enough to not affect designated and non-designated sites or appropriate mitigation creating negligible effects.

9.6.29 In relation to the water objective (2.2) to "*increase resilience and reduce flood risk*", all options were identified as having neutral long-term effects. This is as a result of some options being developed on brownfield sites, some requiring no additional land take or being located within Flood Zone 1. Development of options on brownfield sites reduces the potential for increased flood risk as these sites are likely to already have high volumes of impermeable surfaces, therefore by developing on these sites in comparison to developing on a greenfield site means no new major impermeable surfaces are being created. Thus, meaning no new major impact upon flood risk is likely to arise from this development.

9.6.30 For all options, with the exception of IST1 and ISB4 which were identified as having potential for minor negative effects, in response to the soil objective (3) to "*protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*", neutral long-term effects were identified. These impacts were identified due to either pipelines being buried or other effective implementation of mitigation measures taking place, no additional land take being required or options being located on brownfield sites.

9.6.31 Potential neutral long-term effects have been identified for all options within the Isles of Scilly WRZ in relation to the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". This is due to the limited scope for economic and social enhancement.

9.6.32 Potential neutral long-term effects were also identified for all options in relation to the material assets objective (9.2) "*avoid negative effects on built assets and infrastructure*," mostly due to

no anticipated ongoing disturbance on surrounding transport networks or built infrastructure as a result of the options.

9.7 Demand Options

9.7.1 The Demand Options comprised of:

- **NHH_A_001:** Business Efficiency Visits (BEV) - Visits to businesses including undertaking a water audit, advice and tailored retrofit of free water efficient devices to bathrooms and kitchens only (not wider process water). Business sectors are targeted based on high potential for water savings.
- **NHH_A_003:** Business Efficiency Visits (BEV) – Targeted Large Business Leakage - BEV particularly targeted at leakage detection and fix. Targeted where high-water usage would indicate that leakage might be occurring.
- **NHH_A_004:** Business Efficiency Visits (BEV) – Agricultural Leakage - This option specifically targets the agricultural sector and is delivered in partnership with a third party (e.g., FWAG South West, AHDB, NFU). Expert water audit is provided on farms including advice, improvements, and fixes/targets.
- **NHH_A_005:** Virtual Business Efficiency Visit (VBEV) – This option provides targeted visits by process engineers to large scale businesses to look at how water use can be reduced on site. The output will be recommendations with indicative cost and efficiencies that could be achieved (solutions could include zero liquid discharge (ZLD), water reuse). This option would also consider any potential for the use of non PWS supplies. Target visits based on MOSL data to a limited number of large-scale water users.
- **NHH_A_007:** Virtual Business Efficiency Visits (VBEV) – Water Audits and Devices - Virtual business use assessment undertaken online with an online efficiency representative. The assessment provides advice, recommendations, and actions, and could include sending free water efficiency devices for self-install or a professional plumber visit (e.g., for leaky loo fix).
- **NHH_E_001:** Sector Specific Water Efficiency Advice – The development of a central website/customer engagement dashboard website to provide information on water efficiency campaigns and online tools for customers to engage with that provide water efficiency advice and wider resources, this could be extended to allow customers to login to their accounts to look at real time water use from Smart meters: advice would then be more tailored.
- **NHH_N_001:** Rainwater Harvesting - This option would work with developers to provide rainwater harvesting systems to provide a non-potable supply for use within the new commercial properties. Water is collected from roof runoff and a sustainable drainage system is created. The collected water goes through a basic level of treatment. Rainwater harvesting is included in the development to meet planning conditions.
- **NHH_N_006:** Reuse Treated Wastewater Effluent - Reuse treated wastewater effluent from industrial customers is used for supply to industrial customers. This reclaimed water could be used for industrial/commercial use rather than potable water.
- **HH_A_002:** Home Efficiency Visits (HEV) – Audit with Device - Metered - Visits include undertaking a water audit, advice and tailored retrofits of free water-efficient devices where required (e.g., leaky loo fix) to households with a meter already installed.
- **HH_A_003:** Home Efficiency Visits (HEV) – Audit with Device - New Meter - Visits include undertaking a water audit, advice and tailored retrofits of free water efficient devices where required (e.g., leaky loo fix). HEV's are provided alongside the company's ongoing smart meter rollout.
- **HH_E_009:** Home Efficiency Visits (HEVs) – Local Authorities etc. - Visits include undertaking a water audit, advice and tailored retrofits of free water efficient devices where

required. Targeted at specific housing stock of local authorities or housing associations. The visits are selected based on high potential for water savings.

- **HH_E_013:** School Visits - This option involves working in partnership with schools across the WCWR region to promote water efficiency. The aim is that education regarding water efficiency starts at an early age and therefore will result in long-term demand savings. This would be tailored for children for the different key stages. It would provide lesson plans and material to allow teachers to deliver water efficiency lessons, this would be provided to all schools. This would also be accompanied by a set number of school visits each year (targeted to areas of high water use or demography).
- **HH_E_017:** Targeted Water Efficiency Programmes - A focused water efficiency programme at targeted locations across the WCWR area including advertising, education, and other outreach work.
- **HH_M_009:** Watersmart - This option makes use of customer meter and other data to provide personalised bills and behavioural nudges (e.g., comparisons against local averages).
- **Water Labelling Scenario:** Water Labelling – Minimum standards.

9.7.2 The above options have been assessed against the SEA Objectives, using the Assessment Criteria guide questions (see **Section 7.2)** and Scoring Definitions (see **Annex 1**: **Appendix E**) to determine the expected nature and scale of effects. A summary of the effects against each Objective are presented below in **Table 9.6**, and discussed in the following section. Short-term (ST) construction effects and long-term (LT) operational effects are summarised separately due to the differing nature of effects.

9.7.3 It is acknowledged that demand options have undergone continuous development through the production of the draft WRMP24. The options outlined above are the options assessed as a result of the information available at the time of writing. Should any options be developed further, future reassessment would be undertaken and reported.

Table 9.6: Demand Option Summary of SEA Findings

Option Ref	ST / LT	SEA Topics														
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
NHH_M_009	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
NHH_A_001	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	+
NHH_A_003	ST	-	-	0	0	0	0	0	0	0	0	0	0	0	0	-	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	+
NHH_A_004	ST	-	-	0	0	0	0	-	0	0	0	0	0	0	0	-	-
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
NHH_A_005	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
NHH_A_007	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
NHH_E_001	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
NHH_N_001	ST	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0
	LT	0	+	0	+	+	+	0	0	+	+	0	0	+	0	+	0
NHH_N_006	ST	0	0	0	0	0	0	0	0	?	0	0	0	0	0	?	0
	LT	0	+	0	+	0	+	0	0	+	+	0	0	+	0	+	0
	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

HH_E_009	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
HH_A_002	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
HH_A_003	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
HH_E_013	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	+	0	0	0
HH_E_017	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	+	0	+	0	0	0	0	0	0	0	0	0	0
Water Labelling Scenario	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	LT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Demand Options short-term (construction) effects

9.7.4 For the Demand Options, no potential major or moderate positive short-term (construction) effects have been identified.

9.7.5 Similarly, no potential major or moderate negative short-term effects have been identified for the Demand Options.

9.7.6 Potential minor positive short-term effects have been identified in relation to the water objective (2.3) "*deliver reliable and resilient water supplies*", due to the increased resilience in the short-term from the options due to the repairs of leaks.

9.7.7 Potential minor negative short-term effects have been recorded for a number of the Demand Options. These include minor negative short-term effects for NHH_A_003 and NHH_A_004 in relation to the biodiversity objectives (1.1 and 1.2) to "*protect and enhance designated and non-designated ecological sites*" and to "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". This is due to the potential for construction works if leaks are found from detection works. Depending upon the site location of these two options, there could be effects on biodiversity or ecological sites within the local area and to areas with priority species and vulnerable habitats.

9.7.8 A potential minor negative short-term effect has been identified for NHH_N_001 in relation to the climate objective (5.1) "*reduce embodied and operational carbon emissions*", in response to the new infrastructure required to facilitate rainwater harvesting and the subsequent increase in embodied carbon and vehicle movements on site.

9.7.9 Options NHH_A_001, NHH_A_003, NHH_A_004 and HH_A_003 recorded a potential minor negative short-term in relation to the material assets objective (9.1) "*minimise resource use and waste production*". This is likely a result of the implementation of new metres requiring use of materials and energy for completion, and the generation of waste produced from discarding old meters, or the generation of materials associated with minor works.

9.7.10 Potential minor negative short-term effects were also identified for NHH_A_004 and HH_A_003 in response to the material assets objective (9.2) "*avoid negative effects on built assets and infrastructure*" due to the anticipated increase in vehicular movements across the region if minor works are required.

9.7.11 Potential neutral short-term effects were recorded for the biodiversity objective (1.3) "*reduce the spread or presence of INNS*" for all Demand Options. This attributed to no water transfer taking place and options only involving the repair of leaks and reinstatement of materials in-situ.

9.7.12 For the soil objective "*protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*" and the air objective "*reduce and minimise air emissions*", potential neutral short-term effects were recorded for all Demand Options with the exception of NHH_A_003, likely due to the non-intrusive nature of the works.

9.7.13 Similarly, in relation to the historic environment objective to "*conserve, protect and enhance the historic environment, including archaeology*" and the landscape objective to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*", potential neutral short-term effects were identified, as a result of no new infrastructure required to facilitate the options or new infrastructure being located within existing sites.

9.7.14 Potential neutral short-term effects were identified for all Demand Options in relation to the population and health objective (8.2) "*maintain and enhance tourism and recreation*", again due to the non-intrusive natures of the works.

Demand Options long-term (operational) effects

9.7.15 For the Demand Options, no potential major or moderate positive long-term (operation) effects have been identified.

9.7.16 Similarly, no potential major, moderate or minor negative long-term effects have been identified for the Demand Options.

9.7.17 Potential minor positive long-term effects have been identified for the Demand Options. These include minor positive long-term effects for NHH_N_001 and NHH_N_006 for the biodiversity objective (1.2) "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity*". This is attributed to a likely reduction in water abstraction enhancing biodiversity and habitat connectively in associated waterbodies.

9.7.18 For all Demand Options, with the exception of the Water Labelling Scenario, which scored neutral for both objectives, potential minor positive long-term effects have been recorded for the water objectives (2.1 and 2.3) to "*protect and enhance the quality of the water environment and water resources*" and "*deliver reliable and resilient water supplies*". This is mainly attributed to the options likely reducing water consumption within the region and decreasing water losses within businesses, likely leading to decreased in water consumption, respectively.

9.7.19 Additionally, NHH_N_001 also scored potential minor positive long-term effects for the water objective (2.2) "*increase resilience and reduce flood risk*", due to rainwater harvesting systems lessening the quantity of water entering drainage systems, therefore reducing the effects of flooding.

9.7.20 For options NHH_N_001 and NHH_N_006, potential minor positive long-term effects were recorded in relation to both climate objectives (5.1 and 5.2), to "*reduce operational carbon emissions*" and to "*reduce vulnerability to climate change risks and hazards*". These are a result of the options being likely to reduce the volume of water being pumped and treated from SWW supplies and harvesting technologies collecting rainwater which may be able to provide water supply in dry periods, to an extent.

9.7.21 In response to the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*", all Demand Options, with the exception of the Water Labelling Scenario, which scored neutral, potential minor positive long-term effects were identified. This was mostly due to promoting water efficiency and encouraging a reduction in water consumption.

9.7.22 Potential minor positive long-term effects were identified for NHH_A_001 and NHH_A_003 for the material assets objective (9.2) "*avoid negative effects on built assets and infrastructure*", as a result of the reduce maintenance and improved operational efficiency of the built assets associated with the options.

9.7.23 Similarly, options NHH_N_001 and NHH_N_006 recorded potential minor positive long-term effects for the material assets objective (9.1) "*minimise resource use and waste production*", due to the likely decrease in reliance on portable water therefore an increased volume of portable water available to the region.

9.7.24 Multiple potential neutral long-term effects have been identified across the Demand Options.

9.7.25 Potential neutral long-term effects were recorded for the biodiversity objective (1.3) "*reduce the spread or presence of INNS*" for all Demand Options. This attributed to no water transfer taking place and options only involving the repair of leaks and reinstatement of materials in-situ.

9.7.26 For the soil objective "*protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance*" and the air objective "*reduce and*

minimise air emissions", potential neutral long-term effects were recorded for all Demand Options, likely due to the non-intrusive nature of the works and air quality.

9.7.27 Similarly, in relation to the historic environment objective to "*conserve, protect and enhance the historic environment, including archaeology*" and the landscape objective to "*conserve, protect and enhance landscape, townscape and seascape character and visual amenity*", potential neutral long-term effects were identified, as a result of no new infrastructure required to facilitate the options or new infrastructure being located within existing sites.

9.7.28 Potential neutral long-term effects were identified for all Demand Options in relation to the population and health objective (8.2) "*maintain and enhance tourism and recreation*", again due to the non-intrusive natures of the works.

9.8 Strategic Resource Options Summary

9.8.1 There are two options, BNW7 (Mendip Quarries) and BNW8 (Poole Effluent Recycling and Transfer Scheme), located within the Bournemouth WRZ, that are SROs.

Mendip Quarries

9.8.2 The Mendips Quarry scheme consists of six elements. These are:

- New intake pipeline from Newton Meadows;
- Mendip Reservoir; and
- Four water transfer options:
  - Kennet and Avon Canal;
  - Service Reservoir near Warminster;
  - River Stour; and
  - Chewton Mendip.

9.8.3 For biodiversity, major negative short-term effects were recorded for all six elements of the scheme, predominately due to effects on Severn Estuary Ramsar, Severn Estuary SPA, Severn Estuary SAC and Mendip Woodland SAC, likely due to the predicted changes to the water table. Additionally, due to the Mendip Woodland SAC being located directly adjacent to the construction boundary of the Mendip Reservoir, the scheme design should be considered to minimise the potential effect on this site.

9.8.4 Major negative long-term effects were also identified for all options, with the exception of Service Reservoir near Warminster and Chewton Mendip, which both scored neutral, and Mendip Reservoir, which scored major positive as well as major negative effects in relation to the biodiversity objective "*protect and enhance biodiversity, priority species, vulnerable habitats and habitat connectivity"*. The major negative long-term effects were anticipated as a result of predicted changes to the water table. The major positive long-term effects identified for Mendip Reservoir are attributed to the new natural habitat for birds likely created as a result of the scheme.

9.8.5 Natural capital stocks at all six scheme element locations have the potential to be lost as part of the scheme, including loss of ancient woodland and orchards. Additionally, most elements of the scheme are likely to result in some loss of BNG habitat units, including cropland, grassland and lakes, anticipated due to removal of habitats during construction and the time required for compensatory habitat to reach maturity.

9.8.6 The INNS assessment concluded that in regard to the intake pipeline from Newton Meadows, significant treatment will be required to prevent the transfer of INNS from the River Avon to Mendip Reservoir. Additionally, public and recreational use of Mendip Reservoir may pose a risk of the spread of INNS, which has potential to spread to other water bodies via water transfer. Further investigation is required to determine potential INNS risks associated with the raw transfers.

9.8.7 Three of the six elements of the Mendips Quarry scheme have potential to affect one waterbody each. The WFD Level 1 identified potential for moderate or high-level effects as a result of the new intake pipeline construction on Bristol Avon, the Mendip Reservoir construction works on the Mendip groundwater due to potential interaction between the quarry and local groundwater, and the River Stour outlet due to increased discharge of water of a different quality to this waterbody.

9.8.8 In relation to carbon and climate resilience, the six elements of the scheme recorded various levels of effects. For the intake pipeline from Newton Meadows, minor negative long-term

effects are anticipated due to the abstraction affecting the climate resilience of the local community.

9.8.9 For the Mendips Reservoir, moderate negative short-term effects were predicted in relation to carbon generation due construction activities and to the use of materials to construct new infrastructure.

9.8.10 The Intake pipeline from Newton Meadows is anticipated to have minor negative long-term effects due to the abstraction of water which may affect the resilience of the local environment to climate change. In contrast, in terms of the four water transfer options, Kennet and Avon Canal and River Stour are anticipated to have minor positive long-term effects in relation to climate resilience, due to the increased flow into the outlet water courses. The other two transfer options are likely to have neutral long-term effects in relation to climate resilience.

9.8.11 In relation to historic environment and landscape, the creation of Mendips Reservoir is likely to improve the visual amenity and setting of the current landscape from the existing quarry. Additional, for landscape in relation to Service Reservoir near Warminster, minor negative long-term effects are anticipated, due to the installation of above-ground infrastructure located within the Cranborne Chase & West Wiltshire Downs AONB. All other options are predicted to have neutral long-term effects.

9.8.12 Additionally, for Mendip Reservoir, major positive long-term effects are anticipated for population and health, as the reservoir will have major beneficial effects during operation, due to the new recreational opportunities it provides to the public.

Poole Effluent Recycling & Transfer Scheme

9.8.13 The Poole Effluent Recycling & Transfer (PERT) Scheme is to divert up to 30Ml/d of final effluent from Poole Sewage Treatment Works (STW) to the River Stour via a new pipeline, water recycling plant and a wetland. The additional water discharged to the river would then be re-abstracted at Longham lakes from where it will integrate with South West Water's existing supply system. The solution provides multiple environmental benefits, in addition to providing a drought resilient water source. The discharge will improve flows along approximately 15km of the river Stour when natural flows are low, reduce the amount of effluent entering Poole Harbour and enable abstractions on the River Avon to be reduced.

9.8.14 In the HRA, a total of 14 European sites were screened based on proximity (within 10 km) and hydrological connectivity to the PERT Scheme. Likely significant effects at Stage 1 Screening were identified on five European sites during construction works. This included Dorset Heathlands SPA and Ramsar, Dorset Heaths SAC and Avon Valley SPA and Ramsar site. No adverse effects on European site integrity were identified with the implementation of mitigation measures to limit the effect from air and dust emissions and anthropogenic disturbance on qualifying habitats and species respectively. Likely significant effects were also identified for 10 European sites during operation of the PERT scheme. This included River Avon SAC, Poole Harbour SPA and Ramsar, Avon Valley SPA and Ramsar, Solent and Dorset Coast SPA, Solent Maritime SAC, Solent and Southampton Water SPA and Ramsar and South Wight Maritime SAC. No adverse effects on European site integrity were identified based on currently available information. However, uncertainty remains regarding scheme design and composition of treated effluent for discharge into the River Stour. Therefore, the appropriate assessments will need to be reviewed and updated once more detailed information becomes available.

9.8.15 A total of c. 16 ha of temporary habitat loss and c. 5.5 km of temporary hedgerow loss and a total of c. 2 ha of permanent habitat loss and c. 0.07 km of permanent hedgerow loss is calculated for the whole PERT scheme, in the absence of off-site mitigation. However, the proposed wetland area creation/enhancement would deliver a c. 16 % net gain for the permanent construction impact. Areas of land which may be suitable for mitigation have also

been identified using scoring criteria with the highest scoring sites potentially offering more effective, functioning mitigation. The overall environmental benefits in relation to climate regulation, natural hazard regulation and agriculture ecosystem services over the 80-year lifespan of the scheme equate to circa £300,000 (not including the monetary cost of land acquisition and management for the required mitigation). The assessment approach so far has been high level and it will be refined at Gate 3 following stakeholder engagement, refinement of design and surveys to determine current habitat conditions.

9.8.16 During the operation of the scheme, the discharge of treated effluent from Poole STW via a Water Recycling Centre (WRC) and into the River Stour does not present an INNS transfer risk. The treatment process will prevent onward transmission of INNS, provided that open storage does not occur prior to or following treatment at the WRC. The abstraction of water and transfer via the proposed pipeline from the River Stour to Longham Lakes poses a risk in relation to the transfer of INNS, as raw untreated water is being transferred. The increased volume of transfer resulting from the implementation of the scheme may result in an increased propagule pressure upon Longham Lakes. However, the existing connection between the River Stour and Longham Lakes, both as a result of abstraction from the Stour and relative location of the lakes, has likely resulted in the INNS community of Longham Lakes being similar to the River Stour. As such the relative impact of the operation of the raw water transfer aspect of the scheme is perceived to be minor at this stage. However, confidence in this assessment is limited due to the lack of monitoring data available for the subject area, so that will be collected at the next stage.

9.8.17 The Level 1 WFD assessment screened the Stour (Middle d/s of Pimperne Brook) water body as compliant and Stour (Lower) water body as non-compliant according to the All Company Working Group (ACWG) listed activities. However, for the purposes of the current assessment at Gate 2 of scheme development, they were both carried forward to initial Level 2 assessment. The initial Level 2 assessment identified that the scheme presents potential short-term and long-term negative effects in terms of WFD non-compliance to the Stour (Middle) and Stour (Lower) water bodies for both fish, certain chemicals and macrophytes and phytobenthos combined. However, it must be caveated that there are limited data available meaning data confidence is still considered to be low, and that this assessment has been based on the current understanding of the scheme operating pattern and current water quality permitting which may be subject to change. Also, any additional mitigation measures to be developed at the subsequent Gate 3 design stage have not yet been considered.

9.8.18 Predicted short-term and long-term effects for the historic environment and landscape include effects of the setting and landscape character, and temporary effects on Brog Street/Sleight Lane Conservation Area.

9.8.19 In terms of population and human health, short-term effects are likely including interfaces with existing infrastructure, transport infrastructure and congestion. Long-term effects include a local water supply that is drought resilient.

9.8.20 For embodied carbon, short-term effects are anticipated in relation to use of new materials and construction energy and fuel usage. Long-term effects are also likely in relation to operational energy consumption.

9.9 Informal HRA Findings

9.9.1 The informal HRA Report has been prepared to support the SWW WRMP24 (**Annex 2: Appendix H**)). The informal HRA has been undertaken at a strategic scale to provide an indication of potential effects on relevant designated sites (Habitats Sites) to identify significant constraints and assist with the option shortlisting process. This HRA uses an iterative process, involving two stages:

- Screening, and

- Appropriate Assessment (AA).

9.9.2 The screening stage used a distance-based threshold of 10km as well as the inclusion of more distant sites subject to longer pathways. The AA stage uses a worst-case scenario approach regarding significant effects on Habitats Sites. This stage of the HRA has included those options in which potential LSEs are uncertain, in addition to those which have had potential LSEs identified at the screening stage.

9.9.3 Across the five WRZs, 42 supply options were scoped in as part of the HRA screening process. The HRA presents the findings for each of these 42 options (no demand options required an HRA). 24 options were identified as having potential LSEs on one or more Habitat Sites and therefore have been identified as requiring AA stage assessment. The HRA findings are presented in **Annex 2: Appendix H**.

9.9.4 The Best Value Plan included a total of 11 options, correct as of December 2022. The HRA identified four options which are identified in the preferred (best value) plan that were screened out at Stage 1 of the HRA process due to conclusions of no LSE from both construction and operation phases. The additional seven options could not conclude findings of no LSE and therefore were progressed to Stage 2 AA. Whilst the inclusion of specific mitigation measures can alleviate the potential adverse impacts from six of the seven options included within the preferred (best value) plan which required Stage 2 AA, uncertainty over residual impacts during the operation of options BNW1 remains. An indicative in-combination assessment of these 11 options was undertaken and it was concluded that there will be no in-combination effects on Habitats Sites.

9.9.5 A total of 31 assessed options within the WRMP24 were not identified as part of the Best Value Plan. Of these options, 14 were screened out at Stage 1 of the HRA process due to conclusions of no LSE from both construction and operation phases. The other 17 options could not conclude findings of no LSE and therefore were progressed to Stage 2 AA. Whilst the inclusion of widely used best practice methods and other targeted mitigation alleviated the potential for adverse impacts from 28 of these options, uncertainty over residual impacts during the operation of option COL2, COL12 and ROA4 remains. Further assessment is required to understand the potential for adverse effects.

9.9.6 It is recommended that further assessment and targeted ecological survey data is obtained to accurately conclude potential adverse impacts. Upon receipt of more detailed data, a revised HRA Stage 1 Screening is required, with progression to subsequent HRA stages if necessary.

9.9.7 An indicative in-combination assessment was undertaken for the 11 options identified within the preferred (Best Value) plan. It was concluded that there will be no in-combination effects on Habitats Sites as a result of this plan. Due to many of the options being geographically isolated from one another construction programmes are not anticipated to overlap.

9.10 WFD Assessment Findings

9.10.1 A WFD Report has been prepared to support the SWW WRMP24 (**Annex 3: Appendix I**). The Directive requires all waterbodies (both surface and groundwater) to achieve ‘good status’ and also requires that waterbodies experience no deterioration in status as a result of the options. The WFD assessment is undertaken in accordance with the All Company Working Group (ACWG) Framework, consisting of two stages including an initial Level 1, basic screening and a Level 2, detailed impact screening. Following the completion of these screenings a cumulative assessment has been carried out to determine any additional impacts on respective waterbodies as a result of multiple options being constructed and operated in conjunction with each other.

9.10.2 During the Level 1 WFD assessment, 60 options have been reviewed. An initial review of demand options scoped out all 15 demand options, which have not been assessed further. WFD level 1 assessments have been undertaken for 42 supply options. Two further options were captured under the separate SRO assessment process and one option (BNW17) did not have sufficient information to assess at the time of writing.

9.10.3 As part of the Level 1 WFD assessment, six supply options were identified as having a very low risk of being non-compliant with the WFD objectives and as such did not require further assessment. A WFD Level 2 assessment was identified as being required for the remaining 36 options. A WFD Level 2 assessments for the 36 options has been undertaken and findings presented within **Annex 3: Appendix I**.

9.10.4 The majority of the options assessed as part of the draft WRMP24 have only been subject to high level design, and if taken forward would require additional WFD assessment following design development. The Level 2 WFD assessments have identified further WFD mitigation and assessment would be required for 21 of the options. As such the existing Level 2 assessments have confirmed a potential risk of deterioration to the following 23 waterbodies:

- Lower River Camel;
- Lower River Fowey;
- Upper River Cober;
- Hayle;
- HAYLE;
- Looe and Fowey;
- Stannon Stream (river);
- North Cornwall (groundwater);
- Porth Stream (river);
- Roseworthy Stream;
- Lower River Fal (river);
- Erme;
- Lower River Yealm;
- Lower River Tamar;
- Upper Tamar Lake;
- Roadford Lake (lake);
- Wolf (river);
- Slade Lower Reservoir;
- Avon Dam Reservoir;
- Lower River Lyd (river);
- Sid;
- Lower Creedy (river); and
- Isles of Scilly (groundwater).

9.10.5 Cumulative effects have been assessed for the following three plans, Best Value, Least Cost and Worst Case. The preferred plan looked at 19 options. The in-combination effects assessment highlighted that in eight of the waterbodies where more than one option is planned, there is no change to the risk of deterioration for the combination of options. However, the cumulative assessment identified four waterbodies which have the potential to be impacted on by more than one of the preferred options. During the assessment the WFD identified the following options as having the potential to negatively affect the following waterbodies:

- **Lower River Fowey** as a result of new abstractions in this waterbody from COL3, COL4 and COL15, with cumulative effects leading to significant changes in flow and water quality;
- **Stour (Lower)** has the potential to be impacted by BNW11 and Mendip Quarry SRO as a result of new discharge of treated effluent and discharge into the waterbody. Additionally BNW6 requires the drilling of new abstraction boreholes which is unlikely to have significant effects but could lead to further cumulative impacts;
- **Permian Aquifers in Central Devon (groundwater),** could be impacted by an increased abstraction outside recent actual abstraction rates leading to additional risk of deterioration of the waterbody as a result WIM8 and WIM9; and
- **Lower Dorset Stour and Lower Hampshire Avon (groundwater),** The two following options BNW6 and BNW11 require the construction and operation of new pipeline within the waterbody, although the risk of cumulative effects from these two options is low, the close proximity of these options to GWDTE requires further assessment.

9.10.6 Therefore, the WFD findings identified that there are precautionary WFD compliance risks associated primarily with the operation of additional/new abstractions. The potential hydrological effects could conflict with achieving WFD status objectives. This is particularly the case where hydrology/ river flow is an existing limiting factor. There is a requirement for further development and assessment to be undertaken to improve certainty on the scale of effects in relation to potential biological effects particularly fish, and physio - chemical changes (reduced dilution). Additionally, further mitigation and assessment is required to assess and improve the certainty of the levels of WFD risk.

9.11 INNS Assessment Findings

9.11.1 An INNS Risk Assessment has been prepared to support the draft WRMP24 (**Annex 5: Appendix K)**. One objective of the draft WRMP24 is to reduce the spread or presence of INNS. The scope of the INNS risk assessment is to identify and evaluate the potential for the different options given within the draft WRMP24 to spread INNS. It consists of two assessments: a high-level ‘Level 1 screening’ of the options, and a more detailed ‘Level 2 assessment’ for those options deemed to be of a higher risk.

9.11.2 The Level 1 screening was undertaken to highlight INNS risks and identify options requiring a more detailed Level 2 assessment. During this screening, 37 mainland options and five Isles of Scilly options were assessed. Of the 37 mainland options screened at Level 1, 23 options were assessed as having either no additional risk, or very low risk, with the remaining 14 being recommended for the more detailed Level 2 assessment (excluding SROs). Of the five Isles of Scilly options, none were assessed as having moderate risk and subsequently no Level 2 assessments were recommended.

9.11.3 The Level 2 detailed assessments drew the following conclusions:

- COL2 is calculated as 24.92% risk score which equates to Low risk;
- COL6 is calculated as 33.89% risk score which equates to Low risk;
- COL9a is calculated as 39.38% risk score which equates to High risk;
- COL9b is calculated as 36.38% risk score which equates to High risk;
- COL11 is calculated as 36.98% risk score which equates to High risk;
- COL12 is calculated as 53.60% risk score which equates to Moderate risk;
- COL18 is calculated as 31.69% risk score which equates to Low risk;
- COL19 is calculated as 41.25% risk score which equates to Low risk;
- BNW6 is calculated as 36.07% risk score which equates to Moderate risk;

- ROA2 is calculated as 32.91% risk score which equates to Low risk;
- ROA3 is calculated as 33.66% risk score which equates to Low risk;
- ROA4 is calculated as 50.58% risk score which equates to Low risk;
- ROA12 is calculated as 31.87% risk score which equates to Low risk;
- ROA14 is calculated as 66.29% risk score which equates to Low risk; and
- ROA15 is calculated as 46.25% risk score which equates to Moderate risk.

9.11.4 As part of this assessment no in-combination or cumulative assessments have been undertaken in relation to the preferred (Best Value Plan) or alternative plans at this stage. It is further recommended that the INNS risk assessment is revised using the SAI-RAT tool for options taken forward as more information becomes available. The assessment also specifies that appropriate mitigation for INNS risk should always be considered for options taken forward during both construction and operation.

9.12 NCA / BNG Assessment Findings

9.12.1 The NCA / BNG technical note (**Annex 4: Appendix J**) accompanies the SWW WRMP24, presenting the findings of the NCA and BNG reports, and related opportunities for the options.

9.12.2 The NCA assessment has been split into two stages ‘Stage 1 – defining the zone of influence and the natural capital baseline’ undertaken in accordance with respective guidance (National Natural Capital Atlas: Mapping Indicators (NECR285) and Stage 2 ‘Option level National Capital Assessment’ which is undertaken in accordance with Water Resources Planning Guideline (WRPG) and Enabling a Natural Capital Approach (ENCA) requirements. The BNG assessment was undertaken in accordance with Defra and Natural England’s Biodiversity 3.1 Metric.

9.12.3 A total of 42 options were assessed and 27 options were scoped out during the initial screening due to the option setting and available option information. The findings identified that overall, the 14 assessed options are most likely to cause the temporary and permanent loss of Natural Capital stocks including temporary loss of woodland (broadleaved, yew, mixed, priority and coniferous), during construction which is likely to be reinstated/compensated following construction. However, there is anticipated to be permanent loss of arable stocks, pastoral stocks, other-semi natural grassland stocks, dwarf heath shrub stocks, active floodplain stocks, reservoir stocks and lake stocks as a result of construction activities. Additionally, all of the assessed options were also found to have the potential to result in a loss of BNG habitat units due to the temporary loss of Natural Capital assets during construction, including Option COL2 which has been identified as likely to cause permanent loss of Ancient Woodland. However, the BNG Metric 3.1 does not include Ancient Woodland as this is deemed an irreplaceable habitat and therefore it should be avoided. Therefore, the impacts to biodiversity from the potential loss of Ancient Woodland are not accounted for and SWW should look to avoid Ancient Woodland.

9.12.4 The Best Value Plan considers the option assessments as a whole and the biodiversity units that would be required to be purchased to achieve a 10% net gain in BNG. Providing an estimate of the value of the potential mitigation or enhancement opportunities that will need to be developed further to achieve the 10% BNG required. Where feasible, the Best Value Plan should aim to not only reinstate lost habitat but also provide a greater or more diverse habitat than is lost. The Best Value Plan has the potential to result in an overall loss of BNG units, equating to -42.20%. As a core principle, where possible, the Best Value Plan should aim to not only reinstate lost habitat, but also provide a greater or more diverse habitat than is lost, to achieve overall BNG. SWW should look to undertake Phase One habitat surveys of the Best Value Plan to determine accurate BNG calculations and therefore determine the credits that may be required for purchase.

9.12.5 The Best Value Plan has the potential to result in a loss of ecosystem services due to the temporary and permanent loss of natural capital assets, with an overall loss of around -£4,887 per year for the provision of all the ecosystem services considered within the quantitative assessments.

9.12.6 The options present opportunities to improve the existing habitats across the SWW region through post construction remediation and replacement of low value habitats with higher value habitats. Future habitat creation possibilities to ensure SWW achieve a 10% net gain include those on-site and off-site, or a combination of the two, therefore aiding in developing more resilient options for the future provision of water for SWW WRMP24. Further work will be required to ensure BNG and the provision of natural capital assets and ecosystem services across the WRMP24.

9.12.7 The scheme presents opportunities to enhance ecosystem services by improving the existing habitats along the route through post-construction remediation and replacement of low value habitats with higher value habitats. However, the potential permanent loss of ancient woodland, active flood plain, other semi-natural grassland and dwarf shrub heath could result in the permanent loss of several ecosystem services that the stock provides in synergy, including carbon sequestration, natural hazard management and air pollutant removal without mitigation. The potential permanent loss of arable and pastoral stock could result in the permanent loss of food production.

9.12.8 SWW recognise that their supply side options at their current level of development would not achieve a 10% BNG. In developing their draft WRMP24, SWW is seeking to ensure that the draft WRMP24 results in a net improvement in the environment during its implementation. There is ongoing review of option designs, and assessment of BNG opportunities in the SWW area is being undertaken in collaboration with SWW engineers. This BNG opportunities assessment will identify potential on-site and off-site enhancement and creation opportunities that could result in positive BNG outcomes. SWW are committed to protecting and enhancing the environment and intend to achieve their BNG ambitions by developing a proposal for a biodiversity fund. This will be used to ensure that all schemes provide additional BNG.

10 Plan Appraisal and Decision Making

10.1 Programme Level Appraisal

10.1.1 This chapter discusses the results of the environmental assessments on a programme-wide scale, including the preferred plan and two alternative plans. It also provides a summary of cumulative effects and outlines the rationale for decision making as part of the WRMP24.

10.1.2 The plans assessed as part of the WRMP24 development were:

- Best Value Plan (preferred plan) – using best value applied to SWW modelling outputs;
- Least Cost Plan (alternative) – using SWW cost-based modelling outputs only; and
- Worst Case Plan (alternative) – assuming high climate change and environmental factors impact supply WAFU and demand.

10.1.3 No further alternative plans were identified by SWW.

10.1.4 Each of the above plans comprise of a selection of the individual options assessed in the SEA process. For all three plans, the options are drawn from the Bournemouth, Colliford, Roadford and Wimbleball WRZs.

10.1.5 Options that are listed within the Best Value Plan are described within **Table 2.1**.

10.1.6 The plans have been assessed utilising the SEA Framework SWW WRMP24 SEA Objectives outlined in **Table 7.1**, with each objective scored in accordance with **Table 8.1 (Annex 1: Appendix E).**

10.1.7 Programme-level summaries of the effects for each plan are presented in the sections below, followed by the cumulative effects.

10.2 Best Value Plan

10.2.1 **Table 10.1** and **Table 10.2** below show the combination of options which make up the Best Value Plan. These consist of individual options from the following WRZs: Bournemouth, Colliford, Roadford and Wimbleball. A summary of the anticipated effects for the Best Value Plan is outlined below.

Table 10.1: Best Value Plan short term (construction) SEA summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	ST	-	-	0	0	0	0	-	-	-	0	0	-	0	0	-	0
BNW 3	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BNW 6	ST	-	-	-	-	-	0	-	-	-	0	0	0	-	++	-	-	0
BNW 7	ST	SRO and not assessed under the SEA framework.															
BNW 8	ST	SRO and not assessed under the SEA framework.															
BNW 11	ST	--	--	-	-	-	0	-	-	--	0	--	--	-	+	-	-	-
COL 2	ST	-	-	-	-	-	0	0	0	--	0	0	-	-	+	-	-	-
COL 9	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	0	-
COL 11	ST	-	--	-	-	-	0	0	0	--	0	-	-	-		-	-	-
COL 15	ST	0	0	0	0	-	-	0	-	--	0	-	-	-	+	-	-	0
ROA 7	ST	-	-	-	-	0	0	-	-	-	0	0	-	-	+	0	-	-
ROA 10	ST	-	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
ROA 15	ST	-	-	--	-	-	0	-	-	--	-	-	-	-	+++	-	--	-
ROA 16	ST	-	0	0	0	0	0	0	0	-	0	0	-	-	+	0	-	0
WIM 2	ST	0	-	-	-	0	0	-	-	-	0	0	0	-	+	-	-	0
WIM 5	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	-	--
WIM 7	ST	-	0	0	0	-	0	-	-	--	0	-	-	-	+	0	-	0

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
WIM 8	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIM 9	ST	0	0	0	0	0	0	0	-	-	0	-	0	+	0	-	0
NHH_A_001	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	0
NHH_A_007	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NHH_E_001	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 10.2: Best Value Plan long-term (operation) SEA summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	LT	--	-	0	-	0	- +	0	0	-	+	0	0	0	0	-	0
BNW 3	LT	0	0	0	0	0	+	0	0	0	+	0	0	0	0	0	0
BNW 6	LT	- +	- +	--	-	- +	++	0	-	-	+	0	0	+	-	-	-
BNW 7	LT	SRO and not assessed under the SEA framework.															
BNW 8	LT	SRO and not assessed under the SEA framework.															
BNW 11	LT	0	- +	0	0	- +	++	0	-	-	- +	0	0	0	0	-	0
COL 2	LT	--	--	-	--	-	++	0	0	--	-	0	0	+	-	-	0
COL 9	LT	-	-	-	-	-	+	0	0	-	0	0	0	+	0	0	0
COL 11	LT	-	-	-	-	+	+	0	0	-	0	-	0	0	0	0	0
COL 15	LT	-	-	0	--	0	+	0	0	-	+	0	-	+	-	-	0
ROA 7	LT	0	-	0	-	0	+	0	0	--	- +	0	0	+	0	-	0
ROA 10	LT	0	-	0	+	- +	+	0	- +	0	- +	0	0	0	0	0	0
ROA 15	LT	0	-	--	--	-	+++	-	0	-	- +	0	-	+	+	--	0
ROA 16	LT	0	0	0	0	0	+	0	0	-	- +	0	0	0	0	-	0
WIM 2	LT	0	-	0	-	0	- +	0	0	-	-	0	0	+	0	-	0
WIM 5	LT	0	+	0	-	0	- +	0	0	-	+	0	0	-	-	0	0
WIM 7	LT	0	-	0	-	0	- +	0	0	-	- +	0	0	+	-	-	0

Option Ref	ST / LT	SEA Topics																	
		Biodiversity				Water						Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2		1.3	2.1		2.2	2.3			3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
WIM 8	LT	0	-	+	0	-	+	0	-	+		0	0	-	-	+	0	0	+	0	-	0
WIM 9	LT	0	-	+	0	-	+	0	-	+		0	0	-	-	+	0	0	+	0	-	0
NHH_A_001	LT	0	0		0	+		0	+			0	0	0	0	0	0	+	0	0	+	
NHH_A_007	LT	0	0		0	+		0	+			0	0	0	0	0	0	+	0	0	0	
NHH_E_001	LT	0	0		0	+		0	+			0	0	0	0	0	0	+	0	0	0	

Best Value Plan short-term (construction) effects

10.2.2 No potential major negative short-term (construction) effects were identified for the Best Value Plan (see **Table 10.1**).

10.2.3 With the plan, option ROA15 was identified as having potential major positive short-term effects for objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing".* These effects were attributed to the scale of construction works likely leading to a temporary and major beneficial impact on the economy of the local community, as there is opportunity to create jobs and source from local suppliers, with a very high anticipated upfront cost across a planned construction period of five years.

10.2.4 Option BNW6 was identified to have potential for moderate positive short-term effects in relation to the population and health objective (8.1) to *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"*. These effects were attributed to the significant capital cost predicted, leading to benefits to the local economy during construction including job creation and working with local suppliers for materials.

10.2.5 Potential minor positive and minor negative short-term effects were identified for BNW11, COL2, COL9, COL15, ROA7, ROA16, WIM2, WIM5 and WIM7 in relation to the population and health objective (8.1) "*maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing*". These positives effects are attributed to very substantial upfront capex costs, leading to potential job creation and local supply chain opportunities. Potential minor negative effects are associated with temporary increases in construction activity during this phase, with effects being comprised of dust and noise emissions potentially disturbing local residents along with increased traffic and congestion. Option WIM9 is the only option within the Best Value Plan to have only a minor positive short-term effect on the same objective (8.1), due to the potential creation of jobs during the construction phase benefitting the local economy. The remaining options have all been identified as having neutral short-term effects.

10.2.6 Option BNW11 was identified for moderate negative short-term effects for the biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* which was attributed to outfall points being constructed within designated and non-designated sites. Excluding options BNW3, COL15, WIM2, WIM8, WIM9 and the three demand options of DemB-NHH1, DemB-NHH2 and DemB-NHH3, which were all assessed as neutral, the remaining options were assessed as having potential for minor negative short-term effects against this objective. These effects were attributed to a range of causes including dust and noise pollution, arising from construction activities and construction traffic associated with the options.

10.2.7 Both option BNW11 and COL11 were identified for moderate negative short-term effects for the biodiversity objective (1.2) *"protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity"*. These potential negative effects are due to the anticipated loss of habitats from clearance for construction of the options. Minor negative short-term effects were identified for options BNW1, BNW6, COL2, COL9, ROA7, ROA15, WIM2 and WIM5 for the same objective. Causes of this effect varied between options, with dust, noise and vibration resulting in potential impacts on priority habitat, and excavation of land to construct pipelines being within 500m of priority habitat amongst the potential impacts of the plan.

10.2.8 ROA15 was identified as having potential for moderate short-term negative effects for the biodiversity objective (1.3) *"reduce the spread or presence of INNS"* through construction activities such as sharing equipment. Minor negative short-term effects were also identified for the biodiversity objective (1.3) in options BNW6, BNW11, COL2, COL9, COL11, ROA7, WIM2 and WIM5 due to a range of causes including the potential sharing of equipment as well as the movement of excavated material and works on new connections and discharge points.

10.2.9 Potential moderate negative short-term effects have been identified for BNW11, COL2, COL11, COL15, ROA15 and WIM7 for the climate objective (5.1) to *"reduce embodied carbon emissions"*, largely due to the total embodied carbon from construction which is estimated to be over 2,000 tCO_2 equivalent for each option.

10.2.10 Potential moderate negative short-term effects were identified for BNW11 in relation to the historic environment objective (6) to *"conserve, protect and enhance the historic environment, including archaeology"* regarding the potential for this option to affect the setting of, or prevent access to listed buildings and scheduled monuments, as well as the potential effect on below-ground remains.

10.2.11 BNW11, COL9 and WIM5 have the potential for moderate negative short-term effects in relation to the landscape objective (7) to *"conserve, protect and enhance landscape, townscape and seascape character and visual amenity"* regarding potential effects on visual amenity. These identified effects relate to the requirement for excavation-related site works for the three options.

10.2.12 The material assets objective (9.1) *"minimise resource use and waste production"* was identified for moderate negative short-term effects against ROA15, due to the construction works requiring significant amounts of materials and energy demand. Option WIM5 was also identified as having potential moderate negative short-term effects for the material assets objective (9.2) *"avoid negative effects on built assets and infrastructure"*. This is due to the likely requirement of excavation and the proposed works intersecting major and minor roads.

10.2.13 Minor negative short-term effects were identified for the water objective (2.1) "*protect and enhance the quality of the water environment and water resources"* for options BNW6, BNW11, COL2, COL9, COL11, ROA7, ROA15, WIM2 and WIM5. The potential impacts were identified due to a variety of causes including potential intercepts with minor watercourses by transfer pipelines, which could lead to potential deterioration of water quality due to contamination, and water arising from construction activity. These options being located within Groundwater Source Protection Zones 2 and 3, Drinking Water Protected Areas and Nitrate Vulnerable Zones were also factors in the assessment of water objective 2.1.

10.2.14 Options BNW6, BNW11, COL2, COL9, COL11, COL15, ROA15, WIM5 and WIM7 were all identified as having potential minor negative short-term effects for the water objective (2.2) *"increase resilience and reduce flood risk"* due to options being located within Flood Zone 2 and Flood Zone 3, with areas being potentially affected by flooding during the construction phase particularly during periods of high rainfall.

10.2.15 For the water objective (2.3) *"deliver reliable and resilient water supplies"* all Best Value Plan options were identified as neutral for short-term effects with the exception of COL15 which was identified as a minor negative effect. This was due to the option potentially requiring a reduction in abstraction during construction leading to potentially adverse effects upon water resilience during periods of drought.

10.2.16 Within the Best Value Plan options for the soil objective (3) *"protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance"* there was a mix of short-term effects with BNW1, BNW6, BNW11, COL9, ROA7, ROA15, WIM2, WIM5 and WIM7 identified as having minor negative short-term effects and the remaining options assessed as neutral. Minor negative short-term effects were identified due to a range of factors including option sites being partly in Grade 2 classified agricultural land (very good quality) and soils requiring excavation. In addition, there is direct encroachment of pipeline construction within Historic Landfill Sites, potentially resulting in release of contaminants from surface run off into surface waterbodies.

10.2.17 The air objective (4) *"reduce and minimise air emissions"* was identified as having minor negative short-term effects on the following options, BNW1, BNW6, BNW11, COL9, ROA7,

ROA15, WIM2, WIM5, WIM7, COL15 and WIM9. These effects were identified due to construction-related activities including construction of pipelines and new infrastructure, alongside construction traffic leading to potentially minor negative short-term effects on air quality.

10.2.18 Option ROA15 was identified as having potential minor negative short-term effects on the climate objective (5.2) *"reduce vulnerability to climate change risks and hazards"* with all other options being assessed as neutral. This option was assessed as a potential minor short-term negative effect due to construction works potentially exacerbating flooding as a result of the new reservoir or development of existing source.

10.2.19 Minor negative short-term effects were identified for the population and health objective (8.2) "m*aintain and enhance tourism"* for a range of options including BNW6, BNW11, COL2, COL9, COL11, COL15, ROA15, WIM2 and WIM5. The listed options were assessed as potential minor negative short-term effects due to recreational land and greenspace sites which are likely to be temporarily disrupted during construction. Further effects may be caused through increased construction traffic impacting access to tourism and recreational activities in the vicinity of these options.

Best Value Plan long-term (operational) effects

10.2.20 There were no major negative long-term (operational) effects identified for the Best Value Plan.

10.2.21 Option ROA15 was identified as having a major positive long-term effect for the water objective (2.3) *"deliver reliable and resilient water supplies"*. This was due to the major beneficial effect to the resilience of water supplies for the area as a result of the option.

10.2.22 For the same water objective (2.3), options BNW6, BNW11 and COL2 were identified as having potential moderate positive long-term effects, due to an anticipated significant increase in water yield once operational. All remaining options within the Best Value Plan were assessed as having minor positive long-term effects due to water resilience as a result of increased water abstraction and transfer, as well as a reduction in predicted water losses. Options BNW1, WIM2, WIM5, WIM8 and WIM9 were identified for both minor positive and minor negative long-term effects for the same objective. The minor long-term negative effects were identified due to potential over-abstraction of water sources leading to decreased long-term resilience.

10.2.23 Option BNW6 was the only option with a potential minor positive long-term effect identified for the biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* this was due to the recharging of aquifers potentially resulting in minor positive effects for GWDTEs near the option by providing minor increases in groundwater levels.

10.2.24 Potential minor positive long-term effects were identified for options BNW6, BNW11, WIM5, WIM8 and WIM9 for the biodiversity objective (1.2) *"protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity"*. The assessments of these were concluded due to a range of factors including potential increases in groundwater and discharge back into rivers, enhancing the conditions of GWDTE and resilience of water-dependent habitats particularly during drier seasons. As well as increased surface water flows benefitting priority habitat within 500m of waterbodies from the options.

10.2.25 Potential minor positive long-term effects were identified for water objective (2.1) *"protect and enhance the quality of the water environment and water resources"* for options ROA10, WIM8, WIM9, DemB-NHH1, DemB-NHH2 and DemB-NHH3. These effects were identified due to a range of causes including lower levels of abstraction, leading to increases in resilience and water resourcing. This is anticipated to be due to a reduction in water loss within individual businesses across multiple sectors.

10.2.26 Potential minor positive long-term effects were identified for the water objective (2.2) *"increase resilience and reduce flood risk"* for options BNW6, BNW11, COL11 and ROA10, due to anticipated improvements in flood risk management and a larger capacity to store flood waters during storm events.

10.2.27 Option ROA10 was the only option to be identified as having the potential for minor positive long-term effect on air objective (4) *"reduce and minimise air emissions"*. This was due to the reviewing of efficiencies within equipment and infrastructure, as part of the source optimization. Therefore, resulting in a reduction in air emissions across the option.

10.2.28 Within the Best Value Plan, 13 options were identified as having potential for minor positive long-term effects for the climate objective (5.2) *"reduce vulnerability to climate change risks and hazards"*, with seven of those options also being identified for potential minor negative long-term effects. The minor positive long-term effects were identified due to an expected increase in river flow, contributing to reduced drought-related pressures, whilst reducing the risk of flooding from surface water and increased water storage capacity. The minor negative long-term effects were identified due to a range of factors including increased abstraction potentially depleting groundwater levels, reduced water levels in rivers and reservoirs and the degradation of water quality.

10.2.29 Minor positive long-term effects were identified for options BNW6, COL2, COL9, COL15, ROA7, ROA15, WIM2, WIM8. WIM9, DemB-NHH1, DemB-NHH2 and DemB-NHH3 for the population and health objective (8.1) *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"*. This was due to high ongoing opex costs of operation, which may involve the employment of local people to maintain options. The population and human health objective (8.2) *"maintain and enhance tourism"* only had option ROA15 with minor positive long-term effects due to the increase in water within the reservoir during operation being beneficial for recreational activities such as water sports.

10.2.30 A minor positive long-term effect was identified for the material assets objective (9.2*) "avoid negative effects on built assets and infrastructure"* with the demand option DemB-NHH1 potentially reducing the need for maintenance and improving operational efficiency of the asset.

10.2.31 Potential moderate negative long-term effects were identified for the biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* for options BNW1 and COL2. This is due to the potential effects that increased abstraction may have on groundwater levels as well as the current location of discharge being unknown, resulting in adverse effects not being able to be ruled out for option BNW1. In addition, hydrological connections to designated sites for option COL2 means there is potential for effects through pollution and changes in water levels.

10.2.32 COL2 was also identified for moderate negative long-term effects for the biodiversity objective (1.2) *"protect and conserve biodiversity, including priority species, vulnerable habitats and habitat connectivity"* due to the additional abstraction of 15Ml/d from the River Camel SAC, which is a classified GWDTE. This reduction in water flow therefore has the potential for detrimental effects on the designated site.

10.2.33 Moderate negative long-term effects were identified for BNW6 and ROA15 in relation to biodiversity objective (1.3) *"reduce the spread or presence of INNS"* due to the transfer of untreated water from Matchams site to Longham for BNW6. ROA15 was identified as having potential for a moderate negative long-term effect due to reduced water levels on the River Tamar and Lyd, as well as increased water levels at Roadford Reservoir leading to a change in the suitability for any INNS present. This could result in the spread of INNS to hydrologically connected sites.

10.2.34 Potential moderate negative long-term effects were identified for COL2, COL15 and ROA15 for the water objective (2.1) *"protect and enhance the quality of the water environment and water resources"* due to increased abstraction resulting in potentially long-term deterioration of the water quality caused by reduced flows.

10.2.35 For the climate objective (5.1) "*reduce embodied and operational carbon emissions"* moderate negative effects were identified for options COL2 and ROA7 due to the carbon emissions generated by the options in the operational phase.

10.2.36 Potential moderate negative effects were identified for option ROA15 for the material assets objective (9.1) *"minimise resource use and waste production"* due to the moderate value for ongoing yearly opex and operational carbon emissions. This suggests that moderate amounts of energy will be required for new abstraction points and power to run the new pumping station.

10.2.37 Minor negative long-term effects were identified for options BNW6, BNW11, COL2, COL9, ROA10, ROA15 for the water objective (2.2) *"increase resilience and reduce flood risk"* due to increased discharge of water potentially increasing flood risk within areas of Flood Zone 2 and 3 during periods of high rainfall, as well as increases in impermeable surfaces as a result of the new small-scale assets.

10.2.38 A potential minor negative short-term effect was identified for ROA15 for the soil objective (3) *"protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance"* as a result of potential permanent loss of soils within Grade 3 agricultural land (good to moderate).

10.2.39 The air objective (4) *"reduce and minimise air emissions"* was identified as having minor negative long-term effects for BNW6, BNW11 and ROA10 due to increased emissions from higher levels of pumping and treatment during the operational phase of the options.

10.2.40 Option COL11 was the only option within the Best Value Plan to be identified for potential minor negative long-term effects for the historic environment objective (6) *"conserve, protect and enhance the historic environment, including archaeology"* with all other options identified as having neutral long-term effects.

10.2.41 The landscape objective (7) *"conserve, protect and enhance landscape, townscape and seascape character and visual amenity"* resulted in neutral long-term effects with the exceptions of COL15 and ROA15, which were assessed as having potentially minor negative long-term effects. This was due to potential increases in operational noise emissions from increased abstraction and the likely permanent loss of greenfield land as well as the options being located within a Historic National Landscape Character Area respectively.

10.2.42 Option WIM5 was identified to have minor negative long-term effects for the population and health objective (8.1) due to the pumping of effluent into the River Otter. This has the potential for negative impacts within the local community, which may deter people from using the river for recreational activities.

10.2.43 For the population and human health objective (8.2), minor negative long-term effects were identified for options BNW6, COL2, COL15 and WIM5 due to potential reduction in flows from increased abstraction, with effects particularly likely during periods of drought.

10.2.44 Option BNW6 was identified as having a potential minor long-term negative effect for the material assets objective (9.2), due to the recharging of an aquifer potentially resulting in soil heave which may lead to damage of built infrastructure such as roads with minor negative effects to receptors possible. All other options are predicted as having neutral effects.

10.3 Assessment of Alternatives - Least Cost Plan

10.3.1 **Table 10.3** and **Table 10.4** below shows the combination of options which make up the Least Cost Plan. This consists of individual options from the following WRZs: Bournemouth, Colliford, Roadford and Wimbleball. A summary of the anticipated effects for the Least Cost Plan is outlined below.

Table 10.3: Least Cost Plan short-term (construction) SEA summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	ST	-	-	0	0	0	0	-	-	-	0	0	-	0	0	-	0
BNW 3	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BNW 6	ST	-	-	-	-	-	0	-	-	-	0	0	0	- ++	-	-	0
BNW 11	ST	--	--	-	-	-	0	-	-	--	0	--	--	- +	-	-	-
COL 3	ST	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0
COL 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COL 5	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROA 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROA 6	ST	-	-	-	-	--	0	0	-	-	0	0	0	-	-	-	0
ROA 10	ST	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIM 1	ST	0	0	0	0	0	0	0	0	0	0	0	0	+	0	0	0
WIM 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIM 8	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WIM 9	ST	0	0	0	0	0	0	0	-	-	0	-	0	+	0	-	0

Table 10.4: Least Cost Plan long term (operation) SEA summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	LT	--	-	0	-	0	- +	0	0	-	+	0	0	0	0	-	0
BNW 3	LT	0	0	0	0	0	+	0	0	0	- +	0	0	0	0	0	0
BNW 6	LT	- +	- +	--	-	- +	++	0	-	-	+	0	0	+	-	-	-
BNW 11	LT	0	- +	0	0	- +	++	0	-	-	- +	0	0	0	0	-	0
COL 3	LT	-	-	0	--	0	+	0	0	0	-	0	0	0	-	0	0
COL 4	LT	-	-	-	--	0	+	0	0	-	-	0	0	0	-	0	0
COL 5	LT	-	-	-	--	0	+	0	0	-	-	0	0	+	-	0	0
ROA 4	LT	-	-	-	--	0	+	0	0	-	- +	0	0	0	0	0	0
ROA 6	LT	-	- +	0	-	-	- +	+	0	0	- +	0	0	0	0	0	0
ROA 10	LT	0	-	0	+	- +	+	0	- +	0	- +	0	0	0	0	0	0
WIM 1	LT	0	-	0	--	0	- - +	0	0	-	- +	0	0	0	-	-	0
WIM 4	LT	0	-	0	-	0	- +	0	0	-	-	0	0	0	0	0	0
WIM 8	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
WIM 9	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0

Least Cost Plan short-term (construction) effects

10.3.2 There were no major positive short-term effects identified from the options for the Least Cost Plan.

10.3.3 A mixed moderate positive and minor negative short-term effect was identified for option BNW6 within the population and health objective (8.1) of *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"*. This is due to the very substantial capital costs over a five year period, which could provide job creation and economic benefits during the construction phase. However, negative impacts on this objective could result through creation of dust, noise and traffic. Option BNW11 is identified to have mixed minor negative and minor positive impacts due to the potential for job opportunities throughout construction, and also for the negative impacts discussed.

10.3.4 Minor positive short-term effects were identified for options WIM1 and WIM9 for the population and health objective (8.1) of *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"* due to the substantial capital costs over a four-year period that are required to complete the construction phase of the options, providing job opportunities.

10.3.5 No major negative short-term effects were highlighted with the options in the Least Cost Plan.

10.3.6 Moderate negative short-term effects were identified for BNW11, including two of the biodiversity objectives (1.1 and 1.2) *in "protect and enhance designated and non-designated ecological sites"* and *"protect, conserve and enhance biodiversity including priority species, vulnerable habitats and habitat connectivity"* with minor negative short-term effects anticipated for the remaining biodiversity objective (1.3) *"reduce the spread or presence of INNS"*. These moderate short-term negative effects are associated with the construction of a 29km rising pipeline, which will pass through numerous designated and non-designated sites and will have outfall points within the River Avon System SSSI. Minor negative impacts on biodiversity objective 1.3 could result due to the potential risk of INNS during construction of this option, as well as options BNW6 and ROA6.

10.3.7 Moderate negative short-term effects are also anticipated through implementation of option BNW11, associated with the climate objective (5.1) "*reduce embodied and operational carbon emissions"*, this is attributed to the significant embodied carbon emissions as a result of construction of this option, calculated at 4,931 tCO_2.

10.3.8 Short-term moderate negative effects are anticipated as a result of option BNW11, regarding heritage objective *"conserve, protect and enhance the historic environment, including archaeology"* and landscape objective *"conserve, protect and enhance landscape, townscape and seascape character and visual amenity"* due to potential disturbance to the settings of historic assets and effects on visual amenity of conservation areas, including impacts on the Dorset Heaths Historic NCLA during construction activities.

10.3.9 Option ROA6 could have potential short-term moderate negative effects on water objective (2.2) *"increase resilience and reduce flood risk"* due to significant flooding risks during the construction phase within Flood Zone 3.

10.3.10 Minor negative short-term effects were associated with a multitude of options within the Least Cost Plan. Option BNW11 was identified to have a potential minor negative short-term effect for the material assets objective (9.2) *"avoid negative effects on built assets and infrastructure" due* to the construction of a 29km rising pipeline, which will involve excavation works and the potential for construction-related traffic congestion.

10.3.11 Minor negative short-term effects were also identified for BNW1, BNW6, BNW11, ROA6 and WIM9 for material assets objective (9.1) *"minimise resource use and waste production".* This is

due to the increased demand on natural resources during construction such as increased energy consumption and use of construction materials.

10.3.12 Option ROA10 was assessed as having potential for a minor negative effect during the construction phase on biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"*. This was due to the option site being hydrologically connected to the Dartmoor SAC via the WFD groundwater waterbody of Teign, Avon, Dart and Erme, and the potential for impacts on this SAC. Options BNW1, BNW6 and ROA6 are also identified as having potential for minor negative effects on this objective through potential for impacts on the water environment during construction.

10.3.13 Options BNW1, BNW6, BNW11, ROA6 and WIM9 have been identified as having the potential for minor negative effects on air objective *"reduce and minimise air emissions"*. These were mainly due to construction related emissions arising from the use of machinery and construction related traffic.

10.3.14 Option BNW11 was identified as having potential for moderate negative short-term effects on the historic environment objective "*conserve, protect and enhance the historic environment, including archaeology*" due to potential impacts on a wide range of historic settings during construction. Option WIM9 is identified as having potential minor negative impacts on this objective due to proximity to Listed Buildings and Scheduled Monuments.

Least Cost Plan long-term (operational effects)

10.3.15 No major positive effects were identified with the long-term phase of the options within the Least Cost Plan, similarly no major negative operational effects were associated with the options.

10.3.16 Potential moderate positive effects were identified for options BNW6 and BNW11 in relation to water objective (2.3) *"deliver reliable and resilient water supplies"*. These were due to significant water yield increases, improving drinking water supply resilience.

10.3.17 Minor positive long-term effects were identified for a range of options and for a range of topics within the Least Cost Plan. These were mainly associated with the water objective (2.3) of *"deliver reliable and resilient water supplies"*, the population and health objective (8.1) of *"maintain and enhance the health and wellbeing of the local community including economic and social wellbeing"* and climate objective (5.2) *"reduce vulnerability to climate change risks and hazards"* attributed to various options' contribution to resilient water resources in changing climates and the long-term economic opportunities that the development of these options bring.

10.3.18 Moderate negative long-term effects were identified for COL3, COL4, COL5, ROA4 and WIM1 under the water objective (2.1) of *"protect and enhance the quality of the water environment and water resources"* attributed to the increased abstraction which has the potential to lead to a significant effect through permanent deterioration of WFD status.

10.3.19 Minor negative long-term effects were identified for all options, except for option BNW3, under the topic objective related to biodiversity (1.2) of "*protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity"*. This was mainly due to new or increased abstractions taking place, with potential depletion of the groundwater sources affecting connected ecology and biodiversity.

10.3.20 In the long term BNW6 was the only option to be identified as having a minor negative effect on the material assets objective (9.2) of *"avoid negative effects on built assets and infrastructure"*, this was due to potential damage to infrastructure foundations being the subject of damage from soil heave.

10.3.21 The biodiversity objective (1.3) of *"reduce the spread and presence of INNS"* were assessed as neutral for over half of the options within the Least Cost Plan. However, COL4, COL5 and ROA4

were identified as having the potential for minor negative long-term effects on this objective. BNW6 is identified as having potential for moderate negative effects on this objective. These options either included the connecting of previously unconnected waterbodies, or water transfers which resulted in the options being assessed as having the potential for increasing INNS risks during operation.

10.3.22 Option ROA6 could have a minor positive impact on the soil objective *"protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance"* due to no additional land take being required and/or reinstatement taking place.

10.3.23 Options BNW6 and BNW11 have been identified as having the potential for minor negative effects on air objective *"reduce and minimise air emissions"*. These were mainly due to construction related emissions arising from the use of machinery and construction related traffic.

10.4 Assessment of Alternatives - Worst Case Plan

10.4.1 **Table 10.5**Table 10.5 and **Table 10.6** below shows the combination of options which make up the Worst Case Plan. These consist of individual options from the following WRZs: Bournemouth, Colliford, Roadford and Wimbleball. A summary of the anticipated effects for the Worst Case Plan is outlined below.

Table 10.5: Worst Case Plan short-term (construction) summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	ST	-	-	0	0	0	0	-	-	-	0	0	-	0	0	-	0
BNW 3	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BNW 6	ST	-	-	-	-	-	0	-	-	-	0	0	0	- ++	-	-	0
BNW 11	ST	--	--	-	-	-	0	-	-	--	0	--	--	- +	-	-	-
BNW 8	ST																
COL 3	ST	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0
COL 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COL 5	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COL 12	ST	0	0	0	0	-	-	0	-	--	0	-	-	- +	-	-	-
COL 15	ST	0	0	0	0	-	-	0	-	--	0	-	-	- +	-	-	0
COL 2	ST	-	-	-	-	-	0	0	0	--	0	0	-	- +	-	-	-
COL 9	ST	-	-	-	-	-	0	-	-	-	0	-	--	- +	-	0	-
ROA 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROA 6	ST	-	-	-	-	--	0	0	-	-	0	0	0	-	-	-	0
ROA 7	ST	-	-	-	-	0	0	-	-	-	0	0	-	- +	0	-	-
ROA 10	ST	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROA 16	ST	-	0	0	0	0	0	0	0	-	0	0	-	- +	0	-	0

Option Ref	ST / LT	SEA Topics																
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health			Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1		8.2	9.1	9.2
ROA 2	ST	-	-	-	-	0	-	-	-	---	0	0	-	-	+	-	-	0
ROA 3	ST	-	-	-	-	0	0	-	-	-	0	0	-	-	+	-	-	-
ROA 15	ST	-	-	--	-	-	0	-	-	--	-	-	-	+++	-	-	--	-
ROA 8	ST	--	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
WIM 1	ST	0	0	0	0	0	0	0	0	0	0	0	0	+		0	0	0
WIM 4	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
WIM 5	ST	-	-	-	-	-	0	-	-	-	0	-	--	-	+	-	-	--
WIM 8	ST	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
WIM 9	ST	0	0	0	0	0	0	0	-	-	0	-	0	+		0	-	0
WIM 6	ST	0	-	0	0	--	0	-	-	-	0	0	-	-	+	0	-	-

Table 10.6: Worst Case Plan long-term (Operation) Plan summary

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
BNW 1	LT	--	-	0	-	0	- +	0	0	-	+	0	0	0	0	-	0
BNW 3	LT	0	0	0	0	0	+	0	0	0	+	0	0	0	0	0	0
BNW 6	LT	- +	- +	--	-	- +	++	0	-	-	+	0	0	+	-	-	-
BNW 11	LT	0	- +	0	0	- +	++	0	-	-	- +	0	0	0	0	-	0
BNW 8	LT																
COL 3	LT	-	-	0	--	0	+	0	0	0	-	0	0	0	-	0	0
COL 4	LT	-	-	-	--	0	+	0	0	-	-	0	0	0	-	0	0
COL 5	LT	-	-	-	--	0	+	0	0	-	-	0	0	+	-	0	0
COL 12	LT	-	-	0	--	0	+	0	0	-	+	0	-	+	0	0	0
COL 15	LT	-	-	0	--	0	+	0	0	-	+	0	-	+	-	-	0
COL 2	LT	--	--	-	--	-	++	0	0	--	-	0	0	+	-	-	0
COL 9	LT	-	-	-	-	-	+	0	0	-	0	0	0	+	0	0	0
ROA 4	LT	-	-	-	--	0	+	0	0	-	- +	0	0	0	0	0	0
ROA 6	LT	-	- +	0	-	-	- +	+	0	0	- +	0	0	0	0	0	0
ROA 7	LT	0	-	0	-	0	+	0	0	--	- +	0	0	+	0	-	0
ROA 10	LT	0	-	0	+	- +	+	0	- +	0	- +	0	0	0	0	0	0
ROA 16	LT	0	0	0	0	0	+	0	0	-	- +	0	0	0	0	-	0

Option Ref	ST / LT	SEA Topics															
		Biodiversity			Water			Soil	Air	Climate		Hist. Env	Landscape	Population and Health		Material assets	
		1.1	1.2	1.3	2.1	2.2	2.3	3	4	5.1	5.2	6	7	8.1	8.2	9.1	9.2
ROA 2	LT	-	-	-	--	0	+	--	0	-	- +	0	-	+	-	0	0
ROA 3	LT	0	-	-	-	+	- +	-	0	-	- +	0	-	+ -	-	0	0
ROA 15	LT	0	-	--	--	-	+++	-	0	-	+ -	0	-	+	+	--	0
ROA 8	LT	0	0	0	0	+	+	0	- +	0	- +	0	0	0	0	0	0
WIM 1	LT	0	-	0	--	0	- - +	0	0	-	- +	0	0	0	-	-	0
WIM 4	LT	0	-	0	-	0	- +	0	0	-	-	0	0	0	0	0	0
WIM 5	LT	0	+	0	-	0	- +	0	0	-	+	0	0	-	-	0	0
WIM 8	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
WIM 9	LT	0	- +	0	- +	0	- +	0	0	-	- +	0	0	+	0	-	0
WIM 6	LT	0	-	0	-	--	+	-	0	-	- +	0	0	+	0	-	0

Worst Case Plan short-term (construction) effects

10.4.2 One major positive short-term effect was identified from the options within the Worst Case Plan for ROA15 and one moderate positive short-term effect for BNW6, under the population and health objective (8.1) *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"*. This is mainly due to the temporary but major beneficial effect on the economy, from the very high upfront Capex costs from the planned construction over a five year period. Mixed minor positive and minor negative impacts on this objective could be potentially expected from the development of Option ROA16 due to employment opportunities and an increase in traffic within the local area.

10.4.3 Minor positive short-term effects were identified for COL2, COL9, COL12, COL15, BNW11, ROA3, ROA7, WIM1, WIM5, WIM6 and WIM9 for the population and health objective (8.1) *"maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing"*. This was mainly due to the upfront Capex costs providing job creation within the local area and benefiting the local economy.

10.4.4 One major negative short-term effect was highlighted from the options within the Worst Case Plan, with ROA2 in regard to the climatic factors objective (5.1) of *"reduce embodied and operational carbon emissions"*. The two separate locations for option ROA2 concluded that; option ROA2a operated at 25% of maximum output for 9 months of the year, and full throughput for the remaining 3 months, carbon emissions will be 111 tCO_2 equivalent per annum. If Option ROA2b operated at 25% of maximum output for 9 months of the year, and full throughput for the remaining 3 months, carbon emissions is predicted to will be 111 tCO_2 equivalent per annum. These assessments consider the worst-case scenario of full operation.

10.4.5 Moderate negative short-term effects were also identified for several options including COL2, COL15, BNW11 and ROA15. These included the climatic factors objective (5.1) of *"reduce embodied and operational carbon emissions"* due to the requirement for notable new infrastructure and embodied carbon emissions of 6,570 tCO_2 equivalent. Option COL15 was also assessed as having the potential for moderate negative short-term effects for the same objective due to activities requiring machinery use and a carbon emissions release of 1,218 tCO_2 equivalent. The following options BNW1, BNW6, COL9, ROA3, ROA6, ROA7, ROA16, WIM5, WIM6 and WIM9 have the potential to experience minor negative short-term effects due to minor construction activities anticipated.

10.4.6 Moderate negative short-term effects were identified for the biodiversity objective (1.1) *"protect and enhance designated and non-designated ecological sites"* for option ROA8. Moderate negative short-term effects were identified for two biodiversity objectives (1.1 and 1.2) *"protect and enhance designated and non-designated ecological sites"* and *"protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity"*, for option BNW11. This option also identified moderate negative effects on following objectives (6) *"conserve, protect and enhance the historic environment, including archaeology"* and (7) *"conserve, protect and enhance landscape, townscape and seascape character and visual amenity"*. This is due to extensive construction being required for 29km rising main pipeline which has the potential to result in temporary pollution from increased air pollution from dust and emissions, increased noise and vibration and the potential for contamination from surface runoff which has the potential to disturb wildlife.

10.4.7 WIM5 also has the potential to cause moderate negative short-term effects on two objectives including *"conserve, protect and enhance landscape, townscape and seascape character and visual amenity"* and the material assets objective (9.2) *"avoid negative effects on built assets and infrastructure"* this is due to increased vehicle movements having the potential to cause temporary traffic delays within the local Sidford village and the potential to disrupt views with construction activities predicted to be visible from local residential properties. Further moderate

negative short-term effects are anticipated as a result of ROA15 on the following two SEA objectives (1.3 and 9.1) *"reduce the spread or presence of INNS"* and *"minimise resource use and waste production"*. The remainder of the objectives are likely to result in a minor negative short-term effect with the exception of the water objective (2.3) *"deliver reliable and resilient water supplies"* which is anticipated to be neutral. These negative effects are likely to be due to the construction of a new reservoir and pipeline which will involve extension construction works.

10.4.8 Potential minor negative short-term effects are also anticipated for options BNW1, BNW6, BNW11, COL2, COL12, COL15, ROA2, ROA3, ROA6, ROA7, ROA16, WIM5, WIM6 and WIM9 regarding the material assets objective *"minimise resource use and waste production"* as a result of new material likely used during the construction phase of these options, as well as waste production and an increase in energy consumption.

10.4.9 Option COL9 was assessed has having the potential for moderate short-term effects under the landscape objective of *"conserve, protect and enhance landscape, townscape and seascape character and visual amenity"* due to the option being located within the Cornwall AONB and the requirement for excavation works to take place, with disruption to residential views. Option WIM5 was also assessed as identified as having moderate negative effects in the short-term due to the East Devon AONB and similar effects to that of option COL9. Option ROA16 is identified as having the potential for minor negative impacts on this objective due to short-term construction impacts on local amenity.

10.4.10 Moderate negative effects were also identified for WIM6 under the water objective (2.2) *"increase resilience and reduce flood risk"* as the option is within Flood Risk Zone 1 (1 in 100 year risk) with the potential for effects during the construction period.

10.4.11 All Bournemouth options are anticipated to experience minor negative short-term effects across all the biodiversity objectives with BNW1 and BNW11 experiencing neutral effects in relation to INNS (1.3). Furthermore, the following options are also likely to experience minor negative effects across all biodiversity options COL2, COL9, ROA2, ROA3, ROA6, ROA7, ROA16, WIM5 due to the location of options situated near designated and non-designated habitats and their potential for short-term construction activities to generate increased noise, dust, emissions and vehicle movements which could disturb or pollute respective habitats.

10.4.12 Neutral short-term effects were identified in each option at least once and under a variety of differing objectives. Options BNW3, COL4, COL5, ROA4, WIM4 and WIM8 all scored for neutral short-term effects during the construction phase for each of the assessment criteria, which is mainly attributed to due to no construction works being required or very small-scale infrastructure changes taking place.

Worst Case Plan long-term (operational) effects)

10.4.13 Major positive long-term effects were identified, associated with ROA15 in regard to the water objective (2.3) of *"deliver reliable and resilient water supplies"*. The increase of water supply will result in major beneficial effects and thus is the justification to the assessment of major positive effects with the option in regard to the water objective, and the very high Opex costs leading to major positive effects on the local economy.

10.4.14 Moderate positive long-term effects were identified under the water objective (2.3) of *"deliver reliable and resilient water supplies"* for BNW6, BNW11 and COL2 due to improvements in resilience and increased abstraction yields, with minor positive long-term effects predicted for all the remaining options with the exception of Wimbleball options, BNW1, ROA3 and ROA6 which are largely likely to experience minor negative effects as well, due to increased abstraction posing a risk during periods of drought.

10.4.15 Minor positive long-term effects were scored by BNW6, BNW11, ROA6, WIM5, WIM8 and WIM9 for biodiversity objectives (1.1 and 1.2) of *"protect and enhance designated and non-designated ecological sites"* and *"protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity"*. This is due to the option involving aquifer recharge within which GWDTEs are likely to positively benefit from due to the increases in groundwater levels. ROA6, WIM5, WIM6, WIM8 and WIM9 also offer the potential for minor positive long-term effects associated with the objective (1.2*) "protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity"*. The remaining options are likely to experience a minor or moderate negative long-term effect across this objective due to permanent loss, damage or disturbance to designated and un-designated habitats, with the exception of ROA8 which is likely to experience a neutral effect.

10.4.16 No major negative long-term effects were identified within the options of the Worst Case plan.

10.4.17 Moderate negative long-term effects were highlighted for options COL2, COL3, COL4, COL5, COL12, COL15, ROA2, ROA4, ROA15 and WIM1 under the water objective (2.1) of *"protect and enhance the quality of the water environment and water resources"*, mainly due to new abstraction licences being required and the potential effects upon WFD objectives. There is potential for moderate negative long-term effects associated with water objective (2.2) *"increase resilience and reduce flood risk"* for WIM6 due to being located within a Flood Zone 3.

10.4.18 Two options BNW6 and ROA15 were assessed as having a potential moderate negative effect for the biodiversity objective (1.3) of *"reduce the spread or presence of INNS"* due to the transfer of untreated water. Due to the potential physical transfer of untreated water between two located not previously deemed connected.

10.4.19 For options ROA2 moderate negative long-term effects were identified for permanent loss of arable farmland.

10.4.20 Potential minor positive impacts related to Option BWM3 are expected for climate objective 5.2 *"reduce vulnerability to climate change risks and hazards"* due to the potential for more efficient water supplies which could increase resilience to climate change. Mixed minor positive and minor negatives regarding Option ROA16 on this objective could be expected in relation to a potential increase in climate change resilience through the ability to process more water in drier conditions, however this would result in locally reduced water levels

10.4.21 Minor negative effects have also been recorded for options in relation to the climatic factors objective (5.1) of *"reduce embodied and operational carbon emissions"* with the exception of BWM3, COL3, ROA6, ROA8 and ROA10. The long-term effects were deemed as this due to increases in operational outputs resulting in larger emissions from the option. Two options ROA7 and COL2 have the potential to result in moderate long-term effects due to the scale and location of the options.

10.4.22 Options BNW6 and BNW11 have the potential to result in minor negative long-term effects in relation to air quality objective *"reduce and minimise air emissions"* as a result of increased energy demand leading to increased operational emissions. These two options have the potential to result in minor negative effects but also have potential for improvement to air emissions through the implementation of minor efficiencies. The remaining options, with the exception of ROA10 and ROA8, are predicted to have a neutral long-term effect.

10.4.23 A number of neutral long-term effects have been identified across the Worst Case Plan options. These include the soil objective of *"protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance"* with the exception of ROA15 , WIM6, ROA3 which have the potential to result in minor negative effects during operation and ROA2 with a moderate negative effect. Furthermore ROA6, which identified a minor positive

long-term effect, mainly due to no additional land take being required and/or reinstatement taking place.

10.4.24 Neutral long-term effects were also recorded for the material assets objective (9.2) of *"avoid negative effects on built assets and built infrastructure"* with the exception of BNW6. These neutral effects were mainly recorded due reinstatement of excavated land and any pipelines being buried preventing long term disturbance effects on the surrounding environment.

10.4.25 In the long-term, the material assets objective (9.1) of *"minimise resource use and waste production"* were assessed as having a minor negative effect for the following options ROA7, ROA16, COL2, COL15, BNW1, BNW6, BNW11, WIM1, WIM6, WIM8 and WIM9 these were mainly due to increased energy demands required by the options. Whereas Option ROA15 is identified as having a moderate negative effect due to the increased demand on resources during operation as a result of the size of the option.

10.4.26 The landscape objective *"conserve, protect and enhance landscape, townscape and seascape character and visual amenity"* has been identified as having a neutral long-term effects across all options with the exception of COL15, ROA2, ROA3 and ROA15 which have the potential to result in minor negative effects during operation due to permanent visual impacts on the local community following the construction of new infrastructure. The historic environment objective of "*conserve, protect and enhance the historic environment including archaeology*" was assessed as having neutral long-term effects for all the options within the Worst Case Plan. This was due to the scheme types that these options included and the mitigation measures that would be put in place to mitigate the risk of potential long-term effects to the historic environment.

10.5 Cumulative Effects

Intra Cumulative Effects

10.5.1 To determine potential cumulative construction or operational (Intra) effects, the options which make up the Best Value Plan and the alternative plans (Least Cost and Worst Case) have been assessed using the methodology set out in **Section 8.4**, which is deemed appropriate for the maturity of the scheme and scale of development.

10.5.2 The Intra cumulative effects for each of the preferred plans are captured in (**Table 10.7, Table 10.8** and **Table 10.9**), These tables set out the narrative explaining the assigned score against each of the respective SEA Objectives.

Table 10.7: Best Value Plan Cumulative (Intra) Narrative

Theme	Objective		Construction Narrative	Operation Narrative
Biodiversity	**1.1**	**Protect and enhance designated and non-designated ecological sites.**	This plan is considered to have an overall **minor negative** cumulative effect on SEA Objective 1.1 during construction for the Bournemouth WRZ and a **neutral** effect on the remaining SWW WRZs. Options BNW1 has potential for adverse impacts (as determined by the HRA). This Option is not anticipated to result in any cumulative or in-combination effects during the implementation of the plan given the distance to other Options. BNW11 is located within 5km of Dorset Heathlands Ramsar Site, Kinson Common LNR, Redhill Common LNR, Turbary and Kinson Commons SSSI and Dorset Heaths SAC. BNW11 also intersects Millhams Mead LNR. Option BNW6 is in close proximity to BNW11 and is located within 5km of Millhams Mead LNR. There is potential for moderate negative cumulative effects due to significant construction works associated with these Options. These effects are likely to be mitigated as a result of the completion of BNW6 construction phase prior to construction commencing on BNW11 in 2031. However, there is potential that construction sequencing may result in some minor, cumulative effects due to programme extension and works occurring across both options in 2031. Options ROA7, ROA10, ROA15 and ROA16 are also likely to result in residual minor negative impacts. However, due to construction programmes only ROA10 and ROA16 are anticipated to overlap, with construction scheduled to commence in 2046. As these Options are located a reasonable distance away from each other, effects on designated and non-designated sites are likely to be localised. Options WIM5 and WIM7 are both anticipated to experience minor negative effects. These options are not anticipated to result in any cumulative effects due to variable timeframes for construction. However, localised effects may be experienced as a result of these options.	This plan is considered to have an overall **minor negative** long-term cumulative effect on SEA Objective 1.1 during operation. There is the potential for BNW1, BNW6, COL2, COL9, COL11 and COL15 to result in residual negative effects ranging from moderate to minor. These effects relate to surface water flow changes as a result of increased water treatment (potential reduction in downstream flow, which could result in seasonal adverse effects on ecological receptors). However, due to the distance between these two WRZs, there are not anticipated to be any long-term cumulative effects across the SWW region. There is potential for **minor negative** long-term cumulative effects within the Colliford WRZ, once all options are operational by 2038. This could occur as a result of close proximity to the River Camel SAC which could result in potential hydrological connections. BNW6 has the potential to result in positive minor effects due to aquifer recharge, leading to enhancement of the surrounding environment. However, this is anticipated to be localised. All demand options within this plan are considered to have neutral effects during operation.

Theme	Objective		Construction Narrative	Operation Narrative
			Options COL2, COL9, COL11 are anticipated to have minor negative effects however these effects are likely to be localised due to construction sequencing, with construction start dates ranging from 2025 to 2037 with no overlapping periods. All demand options within this plan are considered to have neutral effects during construction.	
	1.2	**Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity**	This plan is considered to have an overall **neutral** effect across all WRZs during the construction phase against SEA Objective 1.2. Due to the close spatial relationship between BNW6 and BNW11 these Options have the potential to cause minor/moderate negative effects through degradation of habitats, as a result of these Options encroaching upon multiple priority habitats, with further effects on habitat connectivity. However this is unlikely to result any cumulative effects due to programme of works with BWN6 construction due to be complete by 2031 prior to BNW11 commencing in 2031. For Colliford Options COL2 and COL11 which are situated in close proximity to one another and have the potential to exacerbate the loss of priority habitats in these locations, cumulative effects are likely to be mitigated through construction programming with COL11 scheduled for completion 2026 and COL2 commencing 2026. Wimbleball and Roadford WRZ Options have potential to result in residual negative effects. However, due to the distribution of these Options, they are unlikely to result in any significant cumulative effects, although minor localised residual impacts will still be present. All demand options within this plan are considered to have neutral effects during construction.	This plan is expected to have both **moderate negative** and **moderate positive** long-term cumulative effects across all WRZs against SEA Objective 1.2 during operation. The Options are programmed to be operational with varying timescales between 2026 and 2047. There are seven options scheduled for completion by 2026 and 2027. Therefore effects are likely to be experienced concurrently both negatively and positively. Abstraction via groundwater could reduce the groundwater quality levels which in turn could result in negative effects on GWTDEs or vulnerable habitats. Due to a number of Options being situated in close proximity and the increased cumulative extraction rates, this plan is likely to result in an increased risk for the Colliford WRZ with options potentially causing cumulative effects. However, across the Bournemouth, Roadford and Wimbleball WRZs additional treatment of water and reinstatement/ enhancement following construction has the potential to reduce permanent impacts on the ecosystem services offering long-term positive opportunities. All demand options within this plan are considered to have neutral effects during operation.

Theme	Objective		Construction Narrative	Operation Narrative
	1.3	**Reduce the spread or presence of INNS**	This plan is considered to have a **neutral** cumulative effect on SEA Objective 1.3 across the SWW region. Options in Bournemouth BNW6 and BNW11 have the potential for minor negative residual effects. These effects are anticipated to be contained during the construction phase, due to the construction programme for BWN6 anticipated to be complete prior to the commencement of BNW11, Therefore reducing the risk of cumulative effects. There is still potential for cumulative effects as a result of direct actions of construction workers and other construction activities. Although these effects are likely to be mitigated and effects localised providing controls / best practices are adhered to during the construction phase. All demand options within this plan are considered to have neutral effects during construction.	This plan is considered to have a **minor negative** cumulative effect in relation to SEA Objective 1.3 for all WRZs. There is a localised residual risk of INNS transfer associated with BNW6 and ROA15, which have been assessed as moderate negative across the Bournemouth and Roadford WRZs, potentially resulting in transfer of untreated water and therefore potential INNS. Due to the spatial distribution of these Options within their respective WRZs and from each other and other WRZs, there are not anticipated to be any moderate long-term cumulative effects associated with this SEA Objective. There are a number of Options spread across Colliford that are likely to experience minor negative effects, which in turn could result in cumulative effects where the sphere of influence extends across the wider WRZ and neighbouring zones. All demand options within this plan are considered to have neutral effects during operation.
Water	**2.1**	**Protect and enhance the quality of the water environment and water resources**	This plan is considered to have an overall **neutral** effect on SEA Objective 2.1 across the SWW region as a result of construction activities with works anticipated to commence from 2025 until 2047. Due to the close proximity of a number of the Options to watercourses, there is the potential for localised deterioration of waterbodies from construction pollution and/or change in flow during the construction phase following the implementation of the plan. WIM5, WIM8 and WIM9 are located within the Mid Devon NVZ. No infrastructure is anticipated as part of WIM8 and WIM9 therefore, these Options are not anticipated to result in any cumulative effects. Eleven of the proposed Options fall within a Groundwater Source Protection Zone with nine Options being situated	This plan is considered to have an overall **moderate negative** and **minor positive** effect on SEA Objective 2.1. There are several waterbodies that have been identified as having cumulative effects as a result of the plan, these effects are anticipated to be localised and not experienced across WRZs. These include Lower River Fowey, Stour (Lower) and Permian Aquifers in Central Devon (groundwater). Over-abstraction associated with COL2 and COL15 has the potential to result in significant adverse effects on the Lower River Fowey groundwater body. The combination of these effects could lead to significant changes in flow and river water quality to this waterbody.

Theme	Objective		Construction Narrative	Operation Narrative
			within an inner Groundwater Source Protection Zone across the Wimbleball and Bournemouth WRZs. This includes Options BNW1, BNW3, BNW6 and BNW11, WIM2, WIM7, WIM8 and WIM9. Due to the distance between the Wimbleball and Bournemouth, there are unlikely to be any cumulative effects across these WRZs. In addition, there is limited overlap of their respective construction programmes, with only WIM8 and WIM9 programmes overlapping. All demand options within this plan are considered to have neutral effects during construction.	The Stour (Lower) waterbody has the potential to be impacted by increased discharge of water and trade effluent into the waterbody from Option BNW11 and the Mendip Quarry SRO, leading to changes in flow and water quality, which could in turn have implications on the biological status of the waterbody (as determined by the WFD assessment). However, with appropriate monitoring and mitigation in place, these Options are anticipated to result in neutral effects to overall water quality and water resources. Option WIM8 and WIM9 both involve an increase in abstraction from Permian Aquifers in Central Devon. There is a risk that this could result in the deterioration of the waterbody. However, Options WIM8 and WIM9 are also anticipated to result in minor positive cumulative effects. This is because both Options will increase the water flow of the River Exe. Abstracted groundwater will be discharged into this surface waterbody, creating a localised improvement in waterflow and resource. Option ROA10 is also likely to generate a localised minor positive effect, although is unlikely to result in any cumulative benefits across the plan. This Option will result in less abstraction from the Avon Dam, leading to improved water resource resilience. All demand options within this plan are considered to have minor positive effects during operation.
	2.2	**Increase resilience and reduce flood risk**	This plan is considered to have an overall **minor negative** effect on SEA Objective 2.2 when considering appropriate flood mitigation measures implemented during construction. There are 13 Options located within Flood Zone 2, of which 12 are also situated within Flood Zone 3, across the SWW region which have been outlined within this plan. Negative effects are anticipated due to spatial displacement and the nature of works requiring either below ground structures or changes / new infrastructure resulting in potential	This plan is considered to have an overall **minor negative** and **minor positive** cumulative effect on SEA Objective 2.2 during operation. Options BNW11, COL2, ROA10, ROA15, WIM1, WIM4, WIM5, WIM8 and WIM9 are anticipated to result in a change in above ground structures, and as such pose a risk to increased surface water, river and sea flooding. There is potential to improve resilience and reduce flood risk across the following WRZs: BNW1, BNW6 and BNW11; and

Theme	Objective		Construction Narrative	Operation Narrative
			increased surface runoff and changes to groundwater regime. However, effects are likely to be mitigated through the staggered programme with construction activities occurring between 2025 and 2047. Options BNW6 and BNW11 are anticipated to result in a minor negative cumulative effect due to their close proximity in the Bournemouth area. For COL2, COL11 and COL15, cumulative effects are likely to be mitigated through construction programming. However, COL11 and COL15 are both scheduled between 2025 and 2026 leading to potential minor negative cumulative effects. Roadford and Wimbleball WRZs are both likely to experience minor negative localised effects although are unlikely to result in any cumulative impacts due to spatial disparity and programmed construction dates. All demand options within this plan are considered to have neutral effects during construction.	WIM1, WIM5, WIM8 and WIM9. Due to the scale of the abstraction it is likely that these Options will result in a cumulative positive effect in relation to groundwater flooding, reducing the overland flows and run-off within their respective WRZs. All demand options within this plan are considered to have neutral effects during operation.
	2.3	**Deliver reliable and resilient water supplies**	This plan is considered to have a **neutral** cumulative effects regarding this plan under SEA Objective 2.3 during construction. There are potential minor negative residual short-term effects associated with this plan in relation to the delivery of reliable and resilient water supplies for Options COL15. These minor negative effects would be unlikely to result in any cumulative impacts across the WRZs considering the significant distance between the Options and their separate water sources/WRZs All demand options within this plan are considered to have neutral effects during construction.	This plan is considered to have both **moderate negative** and **major positive** cumulative effects on SEA Objective 2.3 during operation. Where hydrologically connected, the operation of various Options could result in potential moderate negative cumulative effects on the delivery of reliable and resilient water supplies through a reduction in water flows/levels, potentially resulting in a reduction in water supply resilience. Options that involve abstraction activities may not necessarily abstract from the same waterbody, however due to the proximity of Options WIM2, WIM5, WIM7 WIM8 and WIM9 overall potential moderate negative long-term cumulative impacts on resilient water supplies cannot be ruled out.

Theme	Objective		Construction Narrative	Operation Narrative
				Options WIM2, WIM5, WIM8 and WIM9 are located within the catchment of the River Exe, where abstraction related impacts on WFD status for this watercourse could be expected. Potential major positive cumulative effects on water supplies across all WRZs are attributed to the combined improved supply of water resources, particularly within the Bournemouth WRZ where moderate positive effects on water supply would be expected from options BNW6 and BNW11 and minor positive effects anticipated across the majority of Bournemouth WRZ options, providing a significant increase in water availability across the SWW region. Further major positive effects are anticipated for ROA15 and moderate positive effects for COL2, which also have the potential to ensure water resilience across the SWW region during operation. All demand options within this plan are considered to have minor positive effect during operation for this objective, which could further support increased resilience to water supplies leading to a major positive cumulative effect.
Soil	**3**	**Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance**	This plan is considered to have **minor negative** cumulative effects on SEA Objective 3 during the construction phase within the Wimbleball WRZs. There are no cumulative effects anticipated across the remaining WRZs during construction. This is predominantly due to construction requiring excavation works, minor temporary losses of versatile agricultural land and direct encroachment upon Historic Landfill Sites. WIM2 and WIM5 are both anticipated to have minor negative effects during construction as a result of excavation of soils and green undisturbed land, impacting the land's functionality. These effects are likely to result in a minor negative cumulative effect due to their close proximity and anticipated programme with construction works occurring between 2030 and 2031. Options BNW6 and BNW11, are both anticipated to have minor negative effect within the Bournemouth WRZ. However	This plan is considered to have a **neutral** cumulative effect on SEA Objective 3 during operation. Option ROA15 has the potential to result in minor negative localised effects as a result of the permanent loss of Grade 3 agricultural land required for the new pumping station. All demand options within this plan are considered to have neutral effects during operation.

Theme	Objective		Construction Narrative	Operation Narrative
			due to their proposed construction timeframes they are unlikely to be under construction concurrently and as such there are no anticipated cumulative effects across this WRZ. There is still potential for localised minor negative effects across the SWW region associated with WIM7, ROA7 and BNW1, from increased temporary loss of agricultural farmland across the region, changes to ground stability and an encroachment upon an Authorised Landfill Sites. However, due to their spatial disparity and staggered construction programme, these are not anticipated to result in any further cumulative effects. All demand options within this plan are considered to have neutral effects during construction.	
Air	**4**	**Reduce and minimise air emissions**	This plan is considered to have an overall **minor negative** effect on SEA Objective 4 during construction. This is due to a number of Options experiencing minor negative residual effects and the temporal and spatial scope of the Options, likely being constructed with overlapping timescales. These effects are anticipated to be exacerbated specifically where Options are situated within clusters such as: BNW6 and BNW11, COL2 and COL15, ROA7 and ROA15 and WIM2 and WIM5. However, cumulative effects are anticipated to be mitigated through construction programming with only options situated within the Wimbleball WRZ scheduled to overlap. This would lead to potential increased air emissions across the Wimbleball SWW region from increased vehicle movements and construction activities. Localised effects are anticipated across all remaining WRZs. All demand options within this plan are considered to have neutral effects during construction.	This plan is considered to have a **minor negative** cumulative effect on SEA Objective 4 across the Bournemouth WRZ. Long-term minor negative effects may be experienced across Bournemouth WRZ due to the close proximity of BNW6 and BNW11 following construction completion 2032. These Options are both anticipated to result in minor negative effects as a result of additional treatment and increased operations, which could present an ongoing increase in air emissions leading to localised effects on air quality across the Bournemouth WRZ. ROA10 is anticipated to have both minor positive and minor negative effects during operation. However, due to spatial disparity between Roadford and Bournemouth this is unlikely to result in any cumulative effects. However, localised effects are still likely to be present. There is a neutral cumulative effect across all remaining WRZs. All demand options within this plan are considered to have neutral effects during operation.

Theme	Objective		Construction Narrative	Operation Narrative
Climate	**5.1**	**Reduce embodied and operational carbon emissions**	This plan is considered to have a **major negative** cumulative effect in relation to SEA Objective 5.1. During the construction phase, BNW11 was identified for moderate negative short-term effects with BNW6 and BNW1 having minor negative short-term effects. Although BNW6 and BNW11 are situated in close proximity, their construction programmes covering 1 year each extend from 2030-2031 and 2031-2032 respectively, mitigating the risk of cumulative effects across the WRZ. Moderate negative effects were also identified for COL2, COL11 and COL15, with COL9 anticipated to have moderate negative effects. There is potential for COL11 and COL15 to result in cumulative effects due to their construction programmes and construction-related activities leading to an overall increase in emissions across the Colliford WRZ. Options COL2 and COL15 are within close proximity to each other, however their respective construction programmes are not anticipated to overlap so would not contribute to cumulative effects. Further moderate negative effects during construction are anticipated across Options ROA15 and WIM7, with minor negative effects associated with ROA7, ROA16, WIM2, WIM5 and WIM9. Therefore, due to increased embodied emissions not being spatially quantifiable, and consequently contributing to the embodied emissions to the UK as a whole, **major negative** cumulative effects are anticipated. All demand options within this plan are considered to have neutral effects during construction.	This plan is considered to have a **moderate negative** cumulative effect in relation to SEA Objective 5.1. All Options located in the Bournemouth, Roadford and Wimbleball WRZs, excluding BNW3 and ROA10, are anticipated to have negative effects. This is due to the Options being expected to result in a minor increase in energy consumption during operation and operational carbon emissions. ROA7 and COL2 are both anticipated to result in moderate releases of operational carbon emissions and are therefore expected to contribute towards an overall **moderate negative** effect. All demand options within this plan are considered to have neutral effects during operation.
	5.2	**Reduce vulnerability to climate change risks and hazards**	This plan is considered to have a **neutral** cumulative effect on SEA Objective 5.2 across the WRZs during construction. This is a result of the scale and geographical nature of the Options and respective construction works timeframes. Option	This plan is considered to have both a **minor negative** and **minor positive** cumulative effect on SEA Objective 5.2 during operation.

Theme	Objective		Construction Narrative	Operation Narrative
			ROA15 has been identified as having the potential for minor negative short-term effects due to excavation activities, but effects are anticipated to be short-term and not cause any change upon climate change risk. Therefore across the SWW region any effects on climate change vulnerability are anticipated to be short-term and localised and are not anticipated to cause any overall changes to climate change risk. All demand options within this plan are considered to have neutral effects during construction.	Minor positive impacts are attributed to WTW upgrades which would allow for the processing of water in drier conditions. Vulnerability to climate change may however be increased where abstractions reduce water levels in affected water bodies which could lead to the depletion of water sources of this nature. Cumulatively, these negative impacts could potentially be amplified where Options (involving water abstraction) are in close proximity to each other and affected waterbodies interact, potentially reducing water levels within a wider area. All demand options within this plan are considered to have neutral effects during operation.
Historic Environment	**6**	**Conserve, protect and enhance the historic environment, including archaeology**	This plan is considered to have an overall **neutral** cumulative effect on SEA Objective 6.1 during construction. Options WIM7 and WIM9 are within 5km of each other but it is unlikely that there would be negative cumulative effects upon the same historic asset despite their overlapping construction phase. This is likely to be due to the distance between options and the scope and scale of works anticipated for each option. Localised moderate negative effects may be experienced at BNW11, and localised minor negative effects at options ROA15, COL9, COL11, COL15 and WIM5. Due to spatial disparity between options and WRZs, construction activities are unlikely to impact upon the same historic asset or be undertaken during concurrent construction periods. All demand options within this plan are considered to have neutral effects during construction.	This plan is considered to have a **neutral** cumulative effect on SEA Objective 6. Option COL11 has been identified as having minor negative impacts during the operational phase, due to potential access to Registered Common Land and potential access to a Scheduled Monument. All remaining Options are not being expected to result in any adverse effects on cultural heritage assets or their settings during the operational phase. Therefore resulting in a neutral cumulative effect. These Options are also unlikely to have any opportunity for enhancement or improvement on public access and / or the enjoyment to these assets. All demand options within this plan are considered to have neutral effects during operation.
Landscape	**7**	**Conserve, protect and enhance landscape, townscape and**	This plan is considered to have a **neutral** cumulative effect on SEA Objective 7, during the construction phase. The majority of Options are situated away from areas of special interest and designated areas for landscape. Best	This plan is considered to have a **neutral** long-term cumulative effect on SEA Objective 7. Options COL15 and ROA15 have potential for minor negative long-term effects as a result of being situated within an Historic

Theme	Objective		Construction Narrative	Operation Narrative
		seascape character and visual amenity	practice mitigation measures can be applied to reduce this impact. Whilst the Options are spatially and temporally diverse there is still potential for some cumulative effects to be experienced. Localised moderate/minor negative effects are anticipated as a result of construction works leading to degradation of the following receptors including Cornwall AONB, East Devon AONB and New Forest National Park. Potential cumulative effects are anticipated for options COL11 and COL15 due to their close proximity. However based on the construction programme these effects are unlikely to be experienced in unison. COL9 was also identified as having further potential for moderate negative localised effects, although this option is spatially diverse and as such no cumulative effects are anticipated across the Colliford WRZ. Options BNW1, BNW11, ROA7, ROA15, ROA16, WIM5 and WIM7 are identified as being sufficiently far enough from one another and with variable construction programmes so as to not result in any cumulative effects across the Bournemouth, Roadford or Wimbleball WRZs. All demand options within this plan are considered to have neutral effects during construction.	National Landscape Character Area and the permanent loss of greenfield land, respectively. However, due to the spatial disparity between options there is unlikely to be a cumulative effect. Although both Options are likely to lead to minor negative localised effects. All demand options within this plan are considered to have neutral effects during operation.
Population and Health	**8.1**	**Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing**	This plan is considered to have both a **minor negative** and **moderate positive** cumulative effect on SEA Objective 8.1, during the construction phase. This plan has the potential to contribute to enhancing the local community through the opportunity to create jobs and source materials locally during construction. Options BNW6 and ROA15 both have a high capital cost, both spanning over a one year construction period (2030 – 2031). This is in-combination with other minor positive effects from 11 options that have the potential to result in a moderate short-term positive cumulative effect across the SWW region, throughout the duration of the plan's construction from 2025 – 2047.	This plan is considered to have a **moderate positive** effect on SEA Objective 8.1. Positive effects within each WRZ could result in knock-on economic enhancement across the whole SWW region leading to moderate positive cumulative effects. Options within the Wimbleball region WIM7, WIM8 and WIM9 are situated in close proximity and are likely to increase water-based recreation activities and increased employment opportunities leading to an improved economy within the WRZ and cumulative benefits.

Theme	Objective		Construction Narrative	Operation Narrative
			However, minor negative effects were identified across each WRZ for the following options: BNW6, BNW11, COL2, COL9, COL11, COL15, ROA7, ROA15, ROA16, WIM2, WIM5 and WIM7. This is as a result of potential interaction with community facilities such as sports grounds, places of worship, playing fields etc. It has been identified that Options within each of the WRZs have the potential to intersect major roads and therefore any concurrent or consecutive construction works across the whole SWW region have the potential to impact local communities. All demand options within this plan are considered to have neutral effects during construction.	There are also anticipated to be localised minor positive effects across Colliford, Bournemouth and Roadford WRZs. These can be attributed to the following Options BNW6, COL2, COL9, COL15 ROA7 and ROA15, potentially requiring moderate ongoing works and maintenance, leading to an increase in employment in the local community. All demand options within this plan are also considered to have a minor positive effects during operation, contributing to the wider SWW region. Option WIM5 has the potential to result in localised minor negative effects on the health and well-being of the local community. This is due to moderate ongoing reputational impacts. Due to the nature of the other Options, there are unlikely to be associated cumulative effects.
	8.2	**Maintain and enhance tourism and recreation**	This plan is considered to have an overall **minor negative** cumulative effect on SEA Objective 8.2 during construction. Options BNW6, BNW11, COL2, COL9, COL11, COL15, WIM2 and WIM5 have the potential to cause temporary disruption to tourism and recreation opportunities for local communities across each WRZ and in conjunction with each other across the SWW region, particularly during the summer high season where there would be an increased number of tourists in the area. None of the Options within this plan have identified any potential opportunities for enhancement and therefore there are no short-term benefits anticipated. During construction there are likely to be multiple road closures and disruption to areas of greenspace at the same period, resulting in knock-on effects on the local community especially during summer periods. This in turn is likely to cause traffic and delays, negatively affect tourism and recreation.	This plan has the potential to result in a **moderate negative** cumulative effect on the SEA Objective 8.2 during operation. Minor negative long-term effects within the identified Options for all WRZs are attributed to the potential for abstraction to impact on recreation and other water-based activities. Options located near/on waterbodies which may hydrologically interact with each other would be at more risk of negative cumulative effects. Options COL2, COL11, COL15, BNW6 and BNW11 involve abstraction activities, these Options are deemed to be in close proximity to one another within their respective WRZ. Although abstraction is not necessarily from the same waterbody, long-term potential minor negative effects could be aggravated leading to moderate negative cumulative impacts on water-flow in local watercourses within Colliford and Bournemouth WRZs. Additionally, Options WIM7, WIM8 and WIM9 are located within the catchment of the River Exe where abstraction-

Theme	Objective		Construction Narrative	Operation Narrative
			All demand options within this plan are considered to have neutral effects during construction.	related cumulative impacts on the WFD status for this watercourse could be expected. All demand options within this plan are considered to have neutral effects during operation.
Material Assets	**9.1**	**Minimise resource use and waste production**	This plan is anticipated to have **minor negative** cumulative effects on SEA Objective 9.1 during the construction phase across respective WRZs and across the wider SWW region. At least two Options from the Bournemouth, Colliford, Roadford, and Wimbleball WRZs are likely to generate minor negative impacts on resource use, waste production and increased use of energy required during construction. The spatial distribution of options within WRZs of; BNW6 and BWN11, COL2 and COL15 and WIM2 and WIM5 are within close proximity respective of their individual WRZs. However the Bournemouth and Colliford Options are not programmed to commence construction activities immediately and are sufficiently scheduled to avoid cumulative effects across the WRZs. The Wimbleball Options have both been scheduled for 2030-2031 meaning that minor negative effects are likely to be exacerbated and there is potential for cumulative minor negative effects due to the options likely requiring an increase in new resources/materials as well as an increase in energy consumption across the same time period. All demand options within this plan are considered to have neutral effects during construction, with the exception of NHH1 which is anticipated to have localised minor negative effects.	This plan is considered to have a **moderate negative** cumulative effect on SEA Objective 9.1 during operation. During operation an increase in resource use and waste production is expected, with minor increases in energy usage (likely sourced from fossil fuels) required for the operation of Options COL2, COL15, WIM2, WIM7, WIM8 and WIM9 resulting in cumulative effects within the Colliford and Wimbleball WRZs due to the increased demand across this region. Within the Roadford WRZ, ROA15 and ROA16 may lead to moderate negative cumulative effects due to the moderate negative effect of ROA15 as a result of an increase in operational energy demand. All Options presented within this plan for the Bournemouth WRZ would likely cumulatively contribute to an increase in energy usage during operation, leading to a moderate negative cumulative effect on resources across the SWW region. All demand options within this plan are considered to have neutral effects during operation.
	9.2	**Avoid negative effects on built assets and infrastructure**	This plan is likely to result in cumulative **neutral** effects on SEA Objective 9.2 during construction. Options COL2 and COL9 are both anticipated to have minor negative effects, due to their potential impacts upon major roads and waterways. Due to their spatial disparity they are	This plan is likely to result in a **neutral** cumulative effect on SEA Objective 9.2 during operation. For the Bournemouth WRZ, a potential localised minor negative effect in relation to Option BNW6 has been identified. Long-term operational impacts relate to the potential for soil heave and resulting damage to built infrastructure, including

Theme	Objective		Construction Narrative	Operation Narrative
			unlikely to experience any negative cumulative effects during construction. Localised moderate and minor negative effects may be experienced with Options WIM5, ROA7 and ROA15, which all have potential for minor negative effects. Due to their spatial disparity they are unlikely to lead to any cumulative effects across their respective WRZs or the wider SWW region. . All demand options within this plan are considered to have neutral effects during construction.	roads. However, due to the nature of the plan and the selected Options there are no cumulative effects anticipated. All demand options within this plan are considered to have neutral effects during operation, with the exception of NHH1 which is anticipated to have a SWW region-wide minor positive effect. This is due to potential increases in operational efficiency following business audits.

10.5.3 During the construction phase of this plan, eight of the SEA Objectives are anticipated to have a negative short-term effect. This is due to spatial disparity with a number of options being in close proximity to one another and scheduling, with construction works anticipated to commence across similar timeframes for the following options: WIM2 and WIM5, COL11 and COL15 and WIM7, WIM8 and WIM9. This Plan also presents a number of clustered options in each of the WRZ which present the risk of cumulative effects on designated sites, and environmental assets as well as an increased risk of disturbance to local communities. These negative effects would be predominantly experienced across the biodiversity, water, soils, air, climate change population and health and material asset SEA Objectives. Ecological sites such as the River Camel SAC and areas of priority habitat are potentially at risk of cumulative effects as a result of degradation from construction activities A major negative effect associated with SEA Objective 5.1 has been identified as part of this plan due to the increased embodied carbon emissions associated with construction activities. During construction there is the potential for major positive effects associated with population and health SEA Objectives. These are likely to arise due to the economy benefits during the construction phase.

10.5.4 Long-term negative operational effects are likely to be experienced across 11 SEA Objectives, with specific reference to water and climate, due to the options resulting in an increase in operational carbon emissions. There is anticipated to be cumulative effects experienced several waterbodies, these include Lower River Fowey, Stour (Lower) and Permian Aquifers in Central Devon (groundwater), as a result of over-abstraction and changes to flow and water quality.

10.5.5 Options BNW1, BNW3, BNW7, COL9, ROA10 and ROA16 are geographically diverse and therefore present limited cumulative effects.

Table 10.8: Least Cost Plan Cumulative (Intra) Narrative

Theme	Objective		Construction Narrative	Operation Narrative
Biodiversity	**1.1**	**Protect and enhance designated and non-designated ecological sites.**	This plan is considered to have an overall **moderate negative** effect on SEA Objective 1.1, within the Bournemouth WRZ and a neutral effect on the remaining WRZs. Option BNW1 has potential for adverse impacts (as determined by the HRA). This Option is not anticipated to result in any cumulative or in-combination effects during the implementation of the plan given the distance to other Options. BNW11 is located within 5km of Dorset Heathlands Ramsar Site, Kinson Common LNR, Redhill Common LNR, Turbary and Kinson Commons SSSI and Dorset Heaths SAC. BNW11 also intersects Millhams Mead LNR. Option BNW6 is in close proximity to BNW11 and is located within 5km of Millhams Mead LNR. There is potential for **moderate negative** cumulative effects due to significant construction works associated with these Options. These effects are likely to be exacerbated due to both Options being programmed within the same 4 year period between 2025 and 2029. Options ROA6 and ROA10 are also likely to result in residual minor negative impacts. However, as these Options are located a reasonable distance away from each other, effects on designated and non-designated sites are likely to be localised. Short-term cumulative effects for the least cost Options in the Wimbleball and Colliford WRZ are considered neutral.	This plan is considered to have an overall **minor negative** long-term effect on SEA Objective 1.1 during operation. Minor negative operational cumulative effects on this objective could be attributed to Options COL3 and COL4, with water flows being reduced due to increased abstraction and subsequent knock-on effects downstream where other designated and non-designated sites may be adversely affected. There is potential for BNW1, BNW6 and ROA4 to result in residual negative effects. During operation, surface water flows may be affected as a result of increased water treatment. This may lead to reduced flow downstream, which could result in seasonal adverse effects on ecological receptors. However, due to the distance between these options, there are not anticipated to be any long-term cumulative effects. BNW6 has the potential to result in positive minor effects due to aquifer recharge, leading to enhancement of the surrounding environment. However, this is anticipated to be localised. There is potential for BNW1 and ROA4 to result in residual negative effects. However due to the distance between these two WRZs, there are not anticipated to be any long-term cumulative effects across the Bournemouth and Roadford WRZs.
	1.2	**Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity**	This plan is considered to have an overall **moderate negative** effect on SEA Objective 1.2. Within the Bournemouth WRZ, there is potential for cumulative effects to occur in relation to Options BNW6 and BNW11 due to multiple areas of substantial construction being located within close proximity to a number of priority habitats, with further effects on habitat connectivity. This is likely to be exacerbated due to all Option timeframes commencing construction works in 2025.	This plan is considered to have **moderate negative** long-term effects across all WRZs on this SEA Objective 1.2 during operation. The programme has identified that the majority of Options are due to be operational between 2026 and 2027, therefore effects are likely to be experienced concurrently both negatively and positively. Abstraction via groundwater could reduce the groundwater quality levels which in turn could result in negative effects on GWTDEs or vulnerable

Theme	Objective		Construction Narrative	Operation Narrative
			ROA6 has potential to result in residual negative effects. However, due to the distance of this Option from the others, it is unlikely to result in any significant cumulative effects, although minor localised residual impacts may still be present. Options in Wimbleball and Colliford are expected to result in neutral residual effects.	habitats. Due to a number of Options being situated in close proximity and the increased cumulative extraction rates, this plan is likely to result in an increased risk. For example, the River Camel and associated watercourses at COL3 and COL4 could lead to reduced flows and impacts to vulnerable ecological habitats within the River Camel system. However, across the Bournemouth, Roadford and Wimbleball WRZs additional treatment of water and reinstatement/ enhancement following construction has the potential to reduce permanent impacts on ecosystem services offering long-term positive opportunities.
	1.3	**Reduce the spread or presence of INNS**	This plan is considered to have an overall **neutral** effect on SEA Objective 1.3 during construction. it is anticipated that any cumulative effects will be mitigated subject to controls being adhered to. Bournemouth, Colliford and Roadford WRZs are likely to experience minor negative localised short-term residual effects.	This plan is considered to have an overall **minor negative** effect on the SEA Objective 1.3 in the Bournemouth, Colliford and Roadford WRZ, and a **neutral** cumulative effect in the Wimbleball WRZ during the operational phase. There is a localised residual risk of INNS transfer associated with BNW6 which has been assessed as moderate negative across the Bournemouth WRZ, potentially resulting in transfer of untreated water and therefore potential INNS. Due to the spatial distribution of this Option within the Bournemouth WRZ and the distance between other WRZs there are not anticipated to be any moderate long-term cumulative effects associated with this SEA Objective. There are a number of Options spread across the Colliford and Roadford WRZs that are likely to experience minor negative effects, which in turn could result in cumulative effects where the Zol of influence extends across the wider WRZ and neighbouring zones. Options within the Wimbleball WRZ are anticipated to have neutral residual effects.
Water	**2.1**	**Protect and enhance the quality of the water environment and water resources**	This plan is considered to have an overall **minor negative** effect on SEA objective 2.1 across the SWW region as a result of construction activities with works anticipated to commence in 2025. Due to the anticipated construction timeframes and the close proximity of a number of the Options to watercourses, there is the potential for localised deterioration of waterbodies from construction	This plan is considered to have an overall **minor negative** and **minor positive** effect on SEA Objective 2.1. There are several waterbodies that have been identified as having cumulative effects as a result of the plan on SEA Objective 2.1, these effects are anticipated to be localised and not experienced across WRZs. These include

Theme	Objective		Construction Narrative	Operation Narrative
			pollution and/or change in flow during the construction phase following the implementation of this plan. Options WIM8 and WIM9 are located within the Mid Devon NVZ. No infrastructure is anticipated as part of WIM8 and WIM9, therefore these Options are not anticipated to result in cumulative effects. Option WIM1 is located within 500m of this NVZ and Option WIM4 is located over 5000m away from any NVZs. No infrastructure changes are anticipated for WIM1 and WIM4, and these Options are also not anticipated to result in any cumulative effects. It is noted that seven of the proposed least cost Options fall within a Groundwater Source Protection Zone with six Options being situated within an inner Groundwater Source Protection Zone across the Bournemouth and Wimbleball WRZs BNW1, BNW6, BNW11, WIM4, WIM8 and WIM9. Due to the distance between Wimbleball and Bournemouth, there are unlikely to be any cumulative effects across these WRZs. However, localised effects could occur as a result of construction activities within each WRZ individually.	Lower River Fowey, Upper River Cover, Stour (Lower). Permian Aquifers in Central Devon (groundwater), River Exe, and the Avon Dam. Over-abstraction associated with COL3 has the potential to result in minor negative effects on the Lower River Fowey groundwater body, Although COL4 is not anticipated to result in any negative effects due to the scale of the option, both are anticipated to interact with the Lower River Fowey. The combination of these Options could lead to minor changes in flow and river water quality. Option COL5 has the potential to result in moderate negative effects on the Upper River Cober due to the Option involving a new increased surface water abstraction. However, as this Option is located a significant distance away from COL3 and COL4 and impacts a different waterbody, the effects are likely to be localised. Options BNW1 and BNW6 have the potential for minor negative effects during operation. This is due to the Options resulting in increased groundwater abstraction and potential deterioration of groundwater quality. However, as these Options utilise different groundwater sources and are a significant distance apart, impacts are likely to be localised. The Stour (Lower) waterbody has the potential to be impacted by increased discharge of water and trade effluent into the waterbody from Option BNW11 and The Mendip Quarry SRO, leading to changes in flow and water quality, which could in turn have implications on the biological status of the waterbody (as determined by the WFD assessment). However, with appropriate monitoring and mitigation in place, BNW11 is anticipated to result in neutral effects to the overall water quality and water resources. Option WIM8 and WIM9 both involve an increase in abstraction from Permian Aquifers in Central Devon. There is a risk that this could result in the deterioration of the waterbody. However, Options WIM8 and WIM9 are also anticipated to result in minor positive cumulative effects. This is because both Options will increase the water flow of the River Exe. Abstracted groundwater will be discharged into this surface waterbody, creating a localised improvement in waterflow and resource.

Theme	Objective		Construction Narrative	Operation Narrative
				Option ROA10 is also likely to generate a localised minor positive effect, although is unlikely to result in any cumulative benefits across the plan. This Option will result in less abstraction from the Avon Dam, leading to improved water resource resilience.
	2.2	**Increase resilience and reduce flood risk**	This plan is considered to have a **minor negative** cumulative effect on SEA Objective 2.2 in the Bournemouth WRZ, when considering appropriate flood mitigation measures implemented during construction. Negative effects are anticipated due to proposed construction timeframes (2025), spatial displacement and the nature of works requiring either below ground structures or changes / new infrastructure resulting in potential increased surface runoff and changes to groundwater regime. Options BNW6 and BNW11 are anticipated to result in a minor negative cumulative effect due to their close proximity in the Bournemouth area. The following least-cost Options would be anticipated to interact: COL3 and COL4; and WIM1 and WIM8. However, these Options do not have any identified impacts on flood risk during construction and therefore their cumulative effect would be **neutral**. Option ROA6 is identified to have potential for moderate negative impacts on flood risk during construction, however as the option would be unlikely to interact with other Options, a **neutral** cumulative impact is expected overall when also considering appropriate flood mitigation measures during construction activities.	This plan is considered to have an overall **minor negative** and **minor positive** operational cumulative effect on SEA objective 2.2 as a result of proposed Options. The following Options: BNW6 and BNW11; ROA6 and ROA10; and WIM1, WIM4, WIM8 and WIM9 are anticipated to result in a change in above ground structures, and as such pose a risk to increased surface water, river and sea flooding. There is also potential to improve resilience and reduce flood risk in accordance with SEA Objective 2.2 across the following WRZs: BNW1, BNW6 and BNW11; and WIM1, WIM8, and WIM9. Due to the scale of the abstraction it is likely that these Options will result in a cumulative positive effect in relation to groundwater flooding, reducing the overland flows and run-off within their respective WRZs.
	2.3	**Deliver reliable and resilient water supplies**	This plan is considered to have a **neutral** cumulative effects regarding this plan under SEA Objective 2.3 during construction. Due to the nature of the proposed Options and the spatial disparity across WRZ's.	This plan is considered to have both **moderate negative** and **moderate positive** cumulative effects on SEA Objective 2.3 during operation. Where hydrologically connected, the operation of various Options could result in potential **moderate negative** cumulative effects on the delivery of reliable and resilient water supplies through a reduction in water flows/levels, potentially resulting in a reduction in water supply resilience. For example, Options WIM1, WIM8 and WIM9 are located within the catchment of the River

Theme	Objective		Construction Narrative	Operation Narrative
				Exe where abstraction related cumulative impacts on WFD status for this watercourse could be expected. Options that involve abstraction activities may not necessarily abstract from the same waterbody, however due to the proximity of Options COL3 and COL4, BNW6 and BNW11 and WIM8 and WIM9 a **moderate negative** long-term cumulative impact on resilient water supplies cannot be ruled out. Identified potential minor and moderate positive residual effects on water supplies across all WRZs are attributed to the combined improved supply of water resources, particularly within Bournemouth WRZ, where Options BNW6 and BNW11 would provide moderate increases in water availability.
Soil	**3**	**Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance**	The plan is considered to have **minor negative** cumulative effects on SEA Objective 3.1 within the Bournemouth WRZ, and **neutral** cumulative effects within the other WRZs, during construction. This is predominantly due to construction requiring excavation works, minor temporary losses of versatile agricultural land and direct encroachment upon Historic Landfill Sites. All Options are anticipated to commence construction in 2025 and due to their close proximity, for Options BNW6 and BNW11, there is anticipated to be a **minor negative** cumulative effect within the Bournemouth WRZ. All short-term effects in the Colliford, Roadford and Wimbleball WRZs are anticipated to be **neutra**l. Therefore, there will not be any cumulative effects within these WRZs.	This plan is considered to have **neutral** cumulative effects on SEA Objective 3.1 during operation. There is the potential for minor positive localised effects as a result of ROA6 with predicted positive impact on soils due to this Option being located within an existing brownfield site. Although localised, positive effects could be experienced within this WRZ.
Air	**4**	**Reduce and minimise air emissions**	This plan is considered to have an overall **moderate negative** effect on SEA Objective 4.1 in the Bournemouth WRZ, and **neutral** cumulative effects in the other WRZs. This is due to the Bournemouth Options experiencing minor negative residual effects and the temporal and spatial scope of the Options, likely being constructed with overlapping timescales. These effects are anticipated to be exacerbated where Options are situated in close proximity such as BNW6 and BNW11. There is the potential for increased air emissions across the Bournemouth region.	This plan is considered to have a **neutral** cumulative effect on SEA Objective 4.1. Long-term minor negative effects may be experienced across Bournemouth and Roadford WRZs, as a result of additional treatment and increased operation durations. Due to the spatial distribution of these two WRZs they are unlikely to result in any long-term cumulative effects across the SWW region. However, they could present an increase in air emissions leading to localised effects on air quality being experienced.

Theme	Objective		Construction Narrative	Operation Narrative
			Options ROA6 and WIM9 are anticipated to result in residual minor negative effects. Due to the distance between both Options and the Bournemouth region, these effects are not likely to be cumulative. All remaining Options in this plan within the Colliford, Roadford and Wimbleball WRZs are anticipated to result in neutral effects.	
Climate	**5.1**	**Reduce embodied and operational carbon emissions**	This plan is considered to have **major negative** cumulative effect in relation to SEA Objective 5.1. During the construction phase, the Options outlined within this plan present an array of potential effects ranging from neutral to major negative depending on the levels of construction required. Option BNW11 identified potential moderate negative effects on carbon emissions. Therefore, due to increased embodied emissions not being spatially quantifiable, and consequently contributing to the UK's embodied emissions, overall **major negative** cumulative effects related to construction of the least cost Options are anticipated.	This plan is considered to have a **minor negative** cumulative effect in relation to SEA Objective 5.1. All Options located in the Bournemouth and Wimbleball WRZs, as well as Options COL4, COL5 and ROA6 are anticipated to have minor negative effects for this SEA objective. This is because the Options are expected to result in a minor increase in energy consumption and associated operational carbon emissions.
	5.2	**Reduce vulnerability to climate change risks and hazards**	This plan is considered to have a **neutral** cumulative effect on SEA Objective 5.2 across all WRZs during construction. This is a result of the scale and geographical nature of the Options and respective construction works. Therefore any effects are anticipated to be short-term and are not anticipated to cause any changes on climate change risk.	This plan is considered to have both a **minor negative** and **minor positive** cumulative effect on SEA Objective 5.2 during operation. Minor positive impacts are attributed to WTW upgrades which would allow for the processing of water in drier conditions. Vulnerability to climate change may however be increased where abstractions reduce water levels in affected waterbodies which could lead to the depletion of water sources of this nature. Cumulatively, these negative impacts could potentially be amplified where Options (involving water abstraction) are in close proximity to each other and affected waterbodies interact, potentially reducing water levels across a wider area.

Theme	Objective		Construction Narrative	Operation Narrative
Historic Environment	**6**	**Conserve, protect and enhance the historic environment, including archaeology**	This plan is considered to have an overall **neutral** cumulative effect on SEA Objective 6.1 during construction. BNW11 and WIM9 are located adjacent or in close proximity to various Grade II Listed Buildings. The effects on the historic environment as a result of construction activities for Options within these WRZs could potentially relate to increased traffic movements, air emissions and vibration. However, due to the distance between the Bournemouth and Wimbleball WRZs, cumulative impacts on the historic environment are expected to be neutral. Options COL5 coincides with World Heritage Site 'Cornwall and West Devon Mining Landscape'. However, Option COL5 does not involve construction works and therefore contribution to cumulative impacts on this heritage asset would not be expected. Options COL3 and COL4 are located within a Registered Park and Garden and approximately 500m from a Registered Battlefield. , however these options do not involve construction of new infrastructure, therefore cumulative effects on this Registered Park and Garden relating to these Options would be minimal.	This plan is considered to have a **neutral** cumulative effect on SEA Objective 6.1. This is due to the Options not being expected to result in any adverse effects on cultural heritage assets or their settings during the operational phase. They are also unlikely to have any opportunity for enhancement or improvement on public access and / or the enjoyment to these assets.
Landscape	**7**	**Conserve, protect and enhance landscape, townscape and seascape character and visual amenity**	This plan is considered to have a **neutral** cumulative effect on SEA Objective 7.1 during the construction phase. Option BNW11 is likely to result in a moderate negative effect and Option BNW1 is likely to result in a minor negative effect. The Options are spatially and temporally diverse and therefore negative cumulative effects would be unlikely to result from construction activities of these options. All short-term effects in the Colliford, Roadford, and Wimbleball WRZs are expected to be neutral.	This plan is considered to have a **neutral** cumulative effect on SEA Objective 7.1 during operation. When Options are operational it is not anticipated that they will have any impact upon the views of the local landscape. It is also expected any ground used during construction of Options would be reinstated post-construction.

Theme	Objective		Construction Narrative	Operation Narrative
Population and Health	**8.1**	**Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing**	This plan is considered to have both **minor negative** and **major positive** cumulative effects on SEA Objective 8.1 during the construction phase. Many of the Options pose a potential risk to community facilities such as golf courses, playing fields, religious grounds etc. It has been identified that Options BNW11 and ROA4 are anticipated to intersect major roads. Construction works as part of these Options have the potential to lead to minor negative cumulative effects in these WRZs. Option BNW11 intersects areas of the A3060, A338, A341, A347, and A348 Major Roads. Construction activity across these major roads and increased vehicle movements could increase noise and dust, causing a minor negative effect in Bournemouth. Additionally, there are multiple Greenspace sites which are located in close proximity to Options BNW6 and BNW11. For example, both of these Options are located within close proximity to the Dudsbury Golf Course. Disruption to Greenspace sites during the construction period has potential to lead to minor negative effects on the health and wellbeing of the local community in the Bournemouth WRZ. Option BNW6 is likely to have a moderate positive effect on the economy in the local area, as there is an opportunity to create jobs and source from local suppliers. Option WIM1 and WIM9 present minor positive effects within the Wimbleball area, however these are expected to be localised.	This plan is considered to have both **minor negative and minor positive** effects on SEA Objective 8.1, regarding the cumulative impact of various Options during operation. Minor negative long-term cumulative effects within the identified Options for all WRZs are attributed to the potential for abstraction to impact on recreation and other water-based activities. Options located near/on waterbodies which may hydrologically interact with each other would be at more risk of negative cumulative effects. In the Bournemouth WRZ, Option BNW6 is anticipated to result in localised minor positive effects as it could lead to an increase in employment in the local community. Option WIM8 and WIM9 are located in close proximity and are both anticipated to result in minor positive effects. These Options are likely to have minor positive impacts in Wimbleball WRZ due to increases in water-based recreation and increased employment opportunities, leading to an improved economy. Option COL5 also could result in minor positive effects in the long term. Localised positive effects within each WRZ could result in knock-on economic enhancement across the whole SWW region leading to minor positive cumulative effects.
	8.2	**Maintain and enhance tourism and recreation**	This plan is considered to have potential for an overall **minor negative** effect on SEA Objective 8.2 during the construction phase. None of the Options within this plan have identified any potential opportunities for enhancement and therefore there are no short-term benefits anticipated as a result of this plan.	This plan has the potential to result in a **moderate negative** cumulative effect on SEA Objective 8.2 during operation. Minor negative long-term cumulative effects associated with the identified Options are attributed to the potential for abstraction to impact on recreation and other water-based activities. Options located near/on waterbodies which may hydrologically interact with each other would be at more risk of negative cumulative effects. For example, Options COL3, COL4 and SNW4 involve

Theme	Objective		Construction Narrative	Operation Narrative
			Options BNW6 and BNW11 both intersect lengths of the A3060, A338, A341, A347 and A348. During construction, there are likely to be multiple road closures within the same period in close proximity resulting in knock on effects to the local community, especially during the summer period. This in turn could cause congestion and delays, negatively affecting tourism and recreation in Bournemouth. There are also areas of Greenspace which are in close proximity to Options BNW6 and BNW11 including Dudsbury Golf Course. During construction there is the potential to cause disruption to activities associated with these sites, leading to minor negative cumulative effects on recreational activities. Option ROA6 is also anticipated to cause minor negative effects in the short-term. However, effects from this Option are likely to be localised.	abstraction activities and could lead to cumulative long-term effects including a reduced water flow within the local catchment.
Material Assets	**9.1**	**Minimise resource use and waste production**	This plan is considered to have **moderate negative** cumulative effects on SEA Objective 9.1, during the construction phase. All least cost Options in the Bournemouth WRZ are likely to cause minor negative effects due to Options requiring construction works. Timeframes are condensed and works are anticipated to commence in 2025 and last on average four years. This is coupled with the spatial distribution of Options across the region with BNW6 and BNW11 being situated in close proximity. Minor effects are likely to be exacerbated and there is the potential for moderate negative cumulative effects to be experienced due to the Options likely requiring an increase in new resources/materials and an increase in energy consumption. Across the SWW region there is likely to be an increased demand on resources and energy consumption as a result of this plan with all Options anticipated to commence in 2025, therefore short-term cumulative negative moderate effects are likely to occur.	This plan is considered to have a **moderate negative** cumulative effect on SEA Objective 9.1, during operation. During operation an increase in resource use and waste production could be expected with regards to increased energy usage, likely sourced from fossil fuels, for Options WIM1, WIM8 and WIM9. All Options presented within this plan for the Bournemouth WRZ would likely cumulatively contribute to an increase in energy usage during operation. A moderate negative cumulative effect on resources for these Options would be expected within this WRZ.

Theme	Objective		Construction Narrative	Operation Narrative
	9.2	**Avoid negative effects on built assets and infrastructure**	This plan is likely to result in cumulative **neutral** effects on SEA Objective 9.2 during construction. Localised moderate negative effects may be experienced as a result of Option WIM5, with localised minor negative effects experienced at Option BNW11. Due to the spatial disparity between Options, these effects are anticipated to be minimal and not result in any cumulative effects.	This plan is likely to result in a **neutral** cumulative effect on SEA Objective 9.2 during operation. For the Bournemouth WRZ, a potential residual minor negative effect is identified in relation to Option BNW6, where long-term operational impacts relate to the potential for soil heave and resulting damage to built infrastructure, including roads. However this effect is predicted to be localised in nature.

10.5.6 There is anticipated to be one major negative cumulative effect, three moderate negative effects and four minor negative effects across seven environmental themes and nine SEA Objectives. These short-term effects are likely to arise as a result of increased construction activities requiring below and above ground structures which are scheduled to commence within overlapping timeframes, spatial displacement resulting in the potential to impact designated sites within the Bournemouth region, including Dorset Heathlands Ramsar Site, Kinson Common LNR , Redhill Common LNR, Turbry and Kinson Commons SSSI and Dorset Heaths SAC as well as areas of priority habitat across the whole SWW catchment. Due to the construction activities there is potential for deterioration of waterbodies during the construction phase as well as an increased use of embodied carbon from materials and use of plant and equipment.

10.5.7 During construction there is the potential for short-term major positive cumulative effects associated with SEA Objective 8.1, these are likely to arise due to the economy benefits during the construction phase, through the creation of jobs.

10.5.8 There are anticipated to be ten long term negative effects associated with this plan associated with five SEA themes and ten SEA Objectives. These themes typically cover biodiversity, water, carbon and population and health where effects are anticipated as a result of reduced water flows and levels in the River Exe preventing the delivery of reliable and resilient water supplies

10.5.9 This plan offers the potential to deliver five long-term positive effects through the reduction in groundwater flooding risk as a result of reduced overland flows and run-off, economic benefits through the creation of jobs and local enhancement as well as improved resilience during periods of drought and wider climate change benefits.

10.5.10 Options BNW1, BNW3, COL5 and ROA6 are geographically diverse and therefore present limited cumulative effects.

Table 10.9: Worst Case Plan Cumulative (Intra) Narrative

Theme	Objective		Construction Narrative	Operation Narrative
Biodiversity	**1.1**	**Protect and enhance designated and non-designated ecological sites.**	This plan is considered to have an overall **neutral** cumulative effect on SEA Objective 1.1 during construction. Five options, BNW1, BNW11, COL2, COL12 and ROA4, that have been identified to have potential for adverse impacts (as determined by the HRA). These options are not anticipated to result in any cumulative or in-combination effects during the implementation of this plan.	There are expected to be **neutral** long-term cumulative effects on SEA Objective 1.1 during operation as a result of this plan. There is potential for Options BNW1, COL2, COL12 and ROA4 to result in residual negative effects. However due to the distance between these options, there are not anticipated to be any long-term cumulative effects across the Bournemouth and Colliford WRZs.
	1.2	**Protect, conserve and enhance biodiversity, including priority species, vulnerable habitats and habitat connectivity**	There is expected to be an overall **moderate negative** effect across the Roadford WRZ during the construction phase on SEA Objective 1.2 as a result of this plan. Within the Roadford WRZ there is the potential for cumulative effects to be experienced, due to the large number of options requiring substantial construction within close proximity to a number of priority habitats. This is likely to be exacerbated given the option timeframes, with all options due to commence construction works in 2025. Due to the proximity between ROA2 and ROA3 and ROA7 and ROA15 respectively these options have the potential to cause moderate negative cumulative effects through degradation to habitats resulting from the potential for options to encroach upon multiple priority habitats, with further potential effects on habitat connectivity. Various options across the Bournemouth, Colliford and Wimbleball WRZs have potential to result in negative residual effects. However, due to the spatial distribution of these options, they are unlikely to result in any significant cumulative effects, although localised residual impacts would likely remain.	There are expected to be both **moderate negative** and **moderate positive** long-term cumulative effects across all WRZs on this SEA Objective 1.2 during operation as a result of this plan. The programme has identified that the majority of options are due to be operational between 2026 and 2027, therefore both negatively and positive potential effects are likely to be experienced concurrently. Abstraction of groundwater could reduce the groundwater quality levels which in turn could result in negative effects on GWTDEs or vulnerable habitats. Due to a number of options being situated in close proximity and the increased cumulative extraction rates, this plan is likely to result in an increased risk. For example, the River Camel and associated watercourses located locally to COL2, COL3 and COL4 could experience reduced flows and impacts to vulnerable ecological habitats within the River Camel system during operation of these options. However, across the Bournemouth, Roadford and Wimbleball WRZs, additional treatment of water and reinstatement/ enhancement following construction has the potential to reduce permanent impacts on the ecosystem services offering long-term positive opportunities.

Theme	Objective		Construction Narrative	Operation Narrative
	1.3	**Reduce the spread or presence of INNS**	This plan is considered to have an overall **neutral** effect on SEA Objective 1.3 during the construction phase. Option ROA15 has the potential for moderate negative residual effects. These effects are anticipated to be contained during the construction phase and will be experienced through direct actions of construction workers and other construction activities. Therefore, it is anticipated that any cumulative effects will be mitigated subject to controls being adhered to. All WRZs are likely to experience either minor or moderate negative localised short-term residual effects.	This plan is considered to have an overall **moderate negative** effect across the WRZs during the operational phase on SEA Objective 1.3. This relates to some options potentially resulting in transfer of untreated water and therefore potential spread of INNS. There are anticipated to be cumulative effects within the following two WRZs (Colliford and Roadford) due to the close proximity of Options COL2 and COL4 / ROA2 and ROA3 respectively. These effects may also be experienced within the wider environment where the ZoI extends across the WRZ and neighbouring zones.
Water	**2.1**	**Protect and enhance the quality of the water environment and water resources**	This plan is considered to have an overall **moderate negative** effect on SEA Objective 2.1 across the SWW region as a result of construction activities with works anticipated to commence 2025. Due to these construction timeframes and the close proximity of a number of options to watercourses, there is the potential for localised deterioration of waterbodies from construction pollution and/or change in flow during the construction phase following the implementation of this plan. Three options, WIM5, WIM8 and WIM9, are located within the Mid Devon NVZ. No infrastructure is anticipated as part of WIM8 and WIM9 therefore, these Options are not anticipated to result in any cumulative effects. It is noted that ten of the proposed options fall within a Groundwater Source Protection Zone with seven options being situated within an inner Groundwater Source Protection Zone across the Wimbleball and Bournemouth WRZs. This includes Options BNW1, BNW3, BNW6, BNW11, WIM4, WIM8 and WIM9. Due to the distance between Wimbleball and Bournemouth, there are unlikely to be any cumulative effects across these WRZs. However, localised effects could occur as a result of construction activities within each WRZ respectively.	This plan is considered to have an overall **moderate negative** and **minor positive** effect on SEA Objective 2.1. There are several waterbodies that have been identified as having cumulative effects as a result of the plan on SEA Objective 2.1, these effects are anticipated to be localised and not experienced across WRZs. These include Lower River Fowey, Stour (Lower), Permian Aquifers in Central Devon (groundwater) and North Cornwall (groundwater). Over-abstraction associated with COL3, COL4 and COL15 has the potential to result in moderate adverse effects on the Lower River Fowey groundwater body. The combination of these effects could lead to significant changes in flow and river water quality to this waterbody. The North Cornwall waterbody (groundwater) is also at risk from over abstraction as a result of Options COL2 and COL12 which could lead to significant changes in groundwater levels, resulting in further impacts on dependent waterbodies and GWDTE's. The Stour (Lower) waterbody has the potential to be impacted by increased discharge of water and trade effluent into the waterbody from Option BNW11 and the Mendip Quarry SRO,

Theme	Objective		Construction Narrative	Operation Narrative
				leading to changes in flow and water quality, which could in turn have implications on the biological status of the waterbody (as determined by the WFD assessment). However, with appropriate monitoring and mitigation in place, BNW11 is anticipated to result in neutral effects to overall water quality and water resources. Option WIM8 and WIM9 both involve an increase in abstraction from Permian Aquifers in Central Devon. There is a risk that this could result in the deterioration of the waterbody. However, Options WIM8 and WIM9 are also anticipated to result in minor positive cumulative effects. This is because both options will increase the water flow of the River Exe. Abstracted groundwater will be discharged into this surface waterbody, creating a localised improvement in waterflow and resource. Option ROA10 is also likely to generate a localised minor positive effect, although is unlikely to result in any cumulative benefits across the plan. This option will result in less abstraction from the Avon Dam, leading to improved water resource resilience. There are no further cumulative impacts currently anticipated across the WRZs.
	2.2	**Increase resilience and reduce flood risk**	This plan is considered to have an overall **moderate negative** effect on SEA Objective 2.2, when considering appropriate flood mitigation measures implemented during construction. There are 20 options located within Flood Zone 2, of which 18 are also situated within Flood Zone 3, across the SWW region which have been outlined within this plan. Due to proposed construction timeframes (2025), spatial displacement and the nature of works requiring either below ground structures or changes / new infrastructure resulting in the potential for increased surface runoff and changes to groundwater. The following options are anticipated to interact: BNW11 and BNW8; COL3, COL4, COL2 and COL15; ROA4 and ROA15; and WIM1 and WIM8.	This plan is considered to have an overall **moderate negative** and minor positive cumulative effect on SEA Objective 2.2 during operation. Options BNW6 and BNW11; COL2 and COL12; ROA6, ROA10 and ROA15; and WIM1, WIM4, WIM5, WIM6, WIM8 and WIM9 are anticipated to result in a change in above ground structures, and as such pose a risk to increased surface water, river and sea flooding. There is potential to improve resilience and reduce flood risk in accordance with SEA Objective 2.2 across the Bournemouth and Wimbleball WRZs through implementation of the following options: BNW1, BNW6 and BNW11; and WIM1, WIM5, WIM6, WIM7, WIM8 and WIM9. Due to the scale of the abstractions, it is likely that these options will result in a cumulative positive effect in relation to surface water flooding, with the potential to

Theme	Objective		Construction Narrative	Operation Narrative
				reducing the overland flows and run-off within their respective WRZs.
	2.3	**Deliver reliable and resilient water supplies**	This plan is considered to have a **neutral** cumulative effect regarding this plan under SEA Objective 2.3 during construction. There are potential minor negative residual short-term effects associated with this plan in relation to the delivery of reliable and resilient water supplies for Options ROA2 and COL15. These minor negative effects would be unlikely to result in any cumulative impacts across the WRZs considering the significant distance between the options and their separate water sources/WRZs.	This plan is considered to have both **moderate negative** and **major positive** cumulative effects on SEA Objective 2.3 during operation. Where hydrologically connected, the operation of various Options could result in potential moderate negative cumulative effects on the delivery of reliable and resilient water supplies through a reduction in water flows/levels, potentially resulting in a reduction in water supply resilience. For example, Options COL2 and COL3, could lead to cumulative long-term effects including a reduced water flow within the local catchment. Additionally, Options WIM1, WIM8 and WIM9 are located within the catchment of the River Exe, where abstraction related cumulative impacts on WFD status for this watercourse could be expected. Options that involve abstraction activities may not necessarily abstract from the same waterbody, however due to the proximity of Options COL2, COL3, COL4 and COL15 and BNW6 and BNW11 overall potential moderate negative long-term cumulative impacts on resilient water supplies cannot be ruled out. Identified potential major positive cumulative effects on water supplies across all WRZs are attributed to the combined improved supply of water resources, particularly within the Roadford WRZ where Option ROA15 would provide a significant increase in water availability at Roadford Reservoir.
Soil	**3**	**Protect and enhance the functionality, quantity and quality of soils, including the protection of sites of geological importance**	This plan is considered to have **minor negative** cumulative effects on SEA Objective 3.1 during operation. This is predominantly due to construction requiring excavation works, minor temporary losses of versatile agricultural land and direct encroachment upon Historic Landfill Sites. All options are anticipated to commence construction in 2025 and, due to their proximity, Options BNW6 and BNW11 are anticipated to have a minor negative cumulative effect within the Bournemouth WRZ.	This plan is considered to have both **moderate negative** and **minor positive** cumulative effects on SEA Objective 3.1 during operation. In the Bournemouth WRZ, neutral cumulative effects would be expected for this objective.

Theme	Objective		Construction Narrative	Operation Narrative
			There are two sets of Options ROA2 and ROA3 and ROA7 and ROA15 which are both situated in close proximity to one another that present a potential for minor negative cumulative effects in relation to SEA Objective 3.1. This is mainly attributed to an increased temporary loss of agricultural farmland across the region, changes to ground stability and an encroachment upon an Authorised Landfill Site with all options due to commence construction within similar timeframes. There is still potential for localised minor negative effects across the SWW region associated with WIM5, WIM6, COL9 and BNW1, however due to their spatial disparity these are not anticipated to result in any further cumulative effects.	Options ROA2 and ROA3, which are located in close proximity to each other, are anticipated to have negative effects due to the permanent loss of arable farmland in the area. ROA15 is also likely to have a negative effect due to the permanent loss of soils in areas of Grade 3 agricultural farmland, therefore resulting in a cumulative change relating to the degradation of important soil resources within the WRZ. However, ROA6 presents a minor positive impact on soils because this option is located on an existing brownfield site. These effects are likely to be localised, although positive effects will be experienced within this WRZ.
Air	**4**	**Reduce and minimise air emissions**	This plan is considered to have an overall **moderate negative** effect on SEA Objective 4.1. This is due to a number of options experiencing minor negative residual effects and the temporal and spatial scope of the Options, likely being constructed with overlapping timescales. These effects are anticipated to be exacerbated specifically where Options are situated within clusters such as: COL2, COL15, COL3 and COL4; ROA2 and ROA3; ROA7 and ROA15; WIM1, WIM5 and WIM9; and BNW6 and BNW11. There is potential for increased air emissions across the SWW region and respective WRZs from construction activities, therefore resulting in moderate negative cumulative effects.	This plan is considered to have a **neutral** cumulative effect on SEA Objective 4.1. Long-term minor negative effects may be experienced across Bournemouth and Roadford WRZs as a result of additional treatment and increased operation durations leading to an increase of long-term air emissions regarding Options BNW11, ROA8 and ROA10. These minor negative effects would be unlikely to result in any cumulative impacts across the WRZs considering the significant distance between the options.
Climate	**5.1**	**Reduce embodied and operational carbon emissions**	This plan is considered to have a **major negative** cumulative effect in relation to SEA Objective 5.1. During the construction phase, the options outlined within this plan could lead to varying potential effects ranging from neutral to major negative dependent on the levels of construction required. ROA2 identified major negative effects. Therefore, due to increased embodied emissions not being spatially quantifiable, and consequently contributing to the embodied emissions to the UK as a whole, major negative cumulative effects are anticipated.	This plan is considered to have a **moderate negative** cumulative effect in relation to SEA Objective 5.1. All options located in the Bournemouth and Wimbleball WRZ's are anticipated to have minor negative effects for this SEA objective. This is because the options are expected to result in a minor increase in energy consumption and operational carbon emissions. Options COL2 (located in close proximity to COL4 and COL5) and ROA7 (located in close proximity to ROA15) are anticipated to result in moderate releases of operational

Theme	Objective		Construction Narrative	Operation Narrative
				carbon emissions. Options COL4, COL5, and ROA15 are also expected to contribute to the overall moderate negative effect anticipated for this objective across the SWW region.
	5.2	**Reduce vulnerability to climate change risks and hazards**	This plan is considered to have a **neutral** cumulative effect on SEA Objective 5.2 across the WRZs during construction. A potential minor negative short-term effect on SEA Objective 5.2 has been identified for Option ROA15 in regard to excavation and increased short-term flood risk. However, this is unlikely to result in any cumulative effects on vulnerability to climate change risks and hazards within this WRZ as it is separated by significant distance from other Options.	This plan is considered to have both a **minor negative** and **minor positive** cumulative effect on SEA Objective 5.2 during operation. Minor positive impacts are attributed to WTW upgrades which would allow for the processing of water in drier conditions. Vulnerability to climate change may however be increased where abstractions reduce water levels in affected water bodies which could lead to the depletion of water sources of this nature. Cumulatively, these negative impacts could potentially be amplified where options involving water abstraction are in close proximity to each other and affected waterbodies interact, potentially reducing water levels across a wider area.
Historic Environment	**6**	**Conserve, protect and enhance the historic environment, including archaeology**	This plan is considered to have an overall **moderate negative** cumulative effect on SEA Objective 6.1 during construction regarding the combined impact of various options. Options COL5 and COL9a coincide with World Heritage Site 'Cornwall and West Devon Mining Landscape'. Option COL9a requires possible construction of a pipeline and other infrastructure and a potential moderate negative impact to this heritage asset has been identified. However, COL5 does not involve construction works and therefore contribution to cumulative impacts on this heritage asset would not be expected. Options COL2 and COL15 coincide with Lanhydrock Registered Park and Garden of which the latter presents the potential for minor negative residual effects. Therefore, as a result of these Options there is likely to be a negative cumulative effect related to the construction phase, including impacts from dust, construction traffic and vibration which could all negatively affect the setting of this Registered Park and Garden. Options COL3 and COL4 also coincide within this Registered Park and Garden however do not involve construction of new infrastructure, therefore neutral cumulative effects on this Registered Park and Garden regarding these options would be minimal.	This plan is considered to have a **neutral** cumulative effect on SEA Objective 6.1 during operation This is due to the options not being expected to result in any adverse effects on cultural heritage assets or their settings during the operational phase. They are also unlikely to have any opportunity for enhancement or improvement on public access and / or the enjoyment to these assets.

Theme	Objective		Construction Narrative	Operation Narrative
			Options COL3, COL4 and COL15 are located approximately 500m from a registered Battlefield '. Due to the distance there are no cumulative construction effects anticipated in relation to this heritage asset.	
Landscape	**7**	**Conserve, protect and enhance landscape, townscape and seascape character and visual amenity**	This plan is considered to have **moderate negative** cumulative effects on SEA Objective 7.1, during the construction phase. Option COL9a is located within Cornwall AONB and option COL12 Is located approximately 338m away. Option COL9a requires construction of a possible new pipeline and a possible new discharge point, leading to a moderate negative effect on the landscape. Option COL12 requires upgrade works to pumps and construction of a new stream support facility, resulting in further minor negative effects on landscape. Therefore, due to the predicted timeframes with both options anticipated to commence in 2025, these effects are likely to be present further degradation to the AONB. However, the majority of options are situated away from areas of special interest and designated areas for landscape. Best practice mitigation measures can be applied to reduce this impact. Whilst the options are spatially and temporally diverse there are still potential for some cumulative effects to be experienced. Option WIM5 is located within East Devon AONB and option WIM4 is located approximately 179m away from East Devon AONB. Option WIM5 requires the construction of a new 5km pipeline and river outfall, resulting in a moderate negative effect on landscape. Whilst Option WIM4 is also located within Blackdown Hills AONB, this option does not require construction works, therefore only poses a neutral effect on landscape. Although, there are unlikely to be any cumulative effects experienced within the Blackdown Hills AONB, this designation will still be subject to moderate negative effects attributed to Option WIM5. Option BNW1 is located within New Forest National Park and has potential for minor negative effects on landscape because it requires the drilling of a new borehole. However due to the option	This plan is considered to have **minor negative** cumulative effects on SEA Objective 7.1, during operation within the Roadford and Colliford WRZs. Options ROA2 and ROA3 are located in close proximity and are both likely to result in minor negative effects. This is due to the presence of new pumping stations and the potential location of a new intake points. Options COL15 and ROA15 are likely to result in minor negative effects due to an increase in above ground infrastructure, however these effects are anticipated to be localised as they are situated within differing WRZs.

Theme	Objective		Construction Narrative	Operation Narrative
			being situated away from any of the other BNW Options or WRZs there are not anticipated to be any cumulative effects. Option ROA8 and ROA10 are located within Dartmoor National Park. Both options require infrastructure changes within the respective existing site footprints. Therefore, there is not anticipated to be any potential cumulative effects on this National Park during in the short-term due to works being located within existing assets.	
Population and Health	**8.1**	**Maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing**	This plan is considered to have both a **minor negative** and **major positive** cumulative effects on SEA Objective 8.1, during the construction phase. Many of the options pose a potential risk to community facilities such as sports grounds, places of worship, playing fields etc. It has been identified that options within the Colliford, Roadford and Wimbleball WRZs, are all anticipated to intersect major roads. Construction works as part of these options have the potential to lead to **minor negative** cumulative effects in these WRZs. Construction activity across major roads and increased vehicle movements could increase noise and dust, causing minor negative cumulative effects in the Bournemouth WRZ. Additionally, there are multiple Greenspace sites which are located in close proximity to Options BNW6 and BNW11. For example, these options are located within close proximity to the Dudsbury Golf Course. Disruption to Greenspace sites during the construction period has potential to lead to **minor negative** effects on the health and wellbeing of the local community in Bournemouth WRZ. Option ROA15 will likely have a temporary and major positive effect on the economy in the local area, as there is an opportunity to create jobs and source from local suppliers. BNW6 is likely to have a moderate positive effect for the same reason. There are also a number of options within each of the WRZs that present minor positive effects. Therefore, across the SWW region there is the potential for a combined **major positive** cumulative effect in relation to this objective.	This plan is considered to have both **minor negative** and **moderate positive** effects on SEA Objective 8.1, regarding the cumulative impact of various options during operation. Options ROA3 and WIM5 are likely to result in minor negative effects on the health and well-being of the local community. This is due to moderate ongoing opex costs and reputational impacts. However, these options are situated a significant distance apart and do not present any direct cumulative effects within their respective WRZ's. There is the potential for wider SWW region to experience **minor negative** cumulative effects during operation of this plan. In the Bournemouth WRZ, Option BNW6 is anticipated to result in localised minor positive effects. This is because the Option will require moderate costs, leading to an increase in employment in the local community. There are pairs of options which are located in close proximity of each other: COL2 and COL15; ROA2 and ROA3; ROA7 and ROA15; and WIM8 and WIM9 which are all anticipated to result in minor positive effects. These options are likely to generate minor positive impacts in their WRZ due to increases in water-based recreation and increased employment opportunities, leading to an improved economy. Therefore, localised positive effects within each WRZ could result in knock-on economic enhancement across the whole SWW region leading to **moderate positive** cumulative effects.

Theme	Objective		Construction Narrative	Operation Narrative
	8.2	**Maintain and enhance tourism and recreation**	This plan could have the potential for an overall **minor negative** effect on SEA Objective 8.2 during construction. The majority of options have the potential to cause temporary disruption to tourism and recreation opportunities for local communities across each WRZ and in conjunction with each other across the SWW region particularly during the summer high season where there are an increased number of tourists visiting the region. None of the options within this plan have identified any potential opportunities for enhancement and therefore there are no short-term benefits anticipated. There are options within Colliford, Roadford and Wimbleball which intersect Major Roads. During construction there are likely to be multiple road closures at the same period within close proximity resulting in knock-on effects on the local community especially during summer periods. This in turn is likely to cause traffic and delays, negatively affecting tourism and recreation. There are also areas of Greenspace which are located in close proximity to Options BNW6 and BNW11 including Dudsbury Golf Course. During construction, there is the potential to cause disruption to construction activities leading to **minor negative** cumulative effects on recreational activities.	This plan has the potential to result in a **moderate negative** cumulative effect with minor positive localised effects on the SEA Objective 8.2 during operation. Minor negative long-term cumulative effects within the identified options for all WRZs are attributed to the potential for abstraction to impact on recreation and other water-based activities. Options located near/on waterbodies which may hydrologically interact with each other would be at more risk of negative cumulative effects. For example, COL2 and COL3 could lead to cumulative long-term effects including a reduced water flow within the local catchment. Options COL2, COL3, COL4, COL15, BNW6 and BNW11 also involve abstraction activities. Options located within each of the WRZs identified above, are deemed to be in close proximity to one another within their respective WRZ. Although abstraction is not necessarily from the same waterbody, long-term potential minor negative effects could be aggravated leading to moderate negative cumulative impacts on water-flow in local watercourses within Colliford and Bournemouth. Additionally, Options WIM1, WIM8 and WIM9 are located within the catchment of the River Exe where abstraction related cumulative impacts on WFD status for this watercourse could be expected. Option ROA15 would lead to an increase of water within the adjoining reservoir and therefore minor positive impacts on local tourism and recreation could be expected. This is a localised effect and is not anticipated to present any cumulative benefits across the SWW region.
Material Assets	**9.1**	**Minimise resource use and waste production**	This plan is considered to have a **moderate negative** cumulative effect on SEA Objective 9.1, during the construction phase. At least two options from the Colliford, Roadford, and Wimbleball WRZs are likely to generate minor negative impacts on resource use and waste production. Option ROA15 will result in moderate	This plan is considered to have a **moderate negative** cumulative effect on SEA Objective 9.1, during operation. During operation an increase in resource use and waste production could be expected with regards to significant energy usage, likely sourced from fossil fuels, required for the

Theme	Objective		Construction Narrative	Operation Narrative
			negative effects due to the significant amount of energy and materials required during construction of pipelines. This option is situated adjacent to ROA7 which also has the potential for further negative effects which could lead to an increased demand on resources. All options identified within this plan for the Bournemouth WRZ are likely to cause minor negative effects due to options requiring construction works. Timeframes are condensed and works are anticipated to commence in 2025 and last on average four years. This is coupled with the spatial distribution of options across the region with BNW6 and BNW11 being situated within close proximity. Minor effects are likely to be exacerbated and there is the potential for moderate negative cumulative effects to be experienced due to the options likely requiring an increase in new resources/materials and an increase in energy consumption. Across the SWW region there is likely to be an increased demand on resources and energy consumption as a result of this plan with all options anticipated to commence in 2025, therefore short-term cumulative negative moderate effects are likely to occur across the whole region.	operation of Option ROA15, and minor increase in energy usage for Options COL2, COL15, ROA2, WIM1, WIM6, WIM8 and WIM9. All options presented within this plan for the Bournemouth WRZ would likely cumulatively contribute to an increase in energy usage during operation. A moderate negative cumulative effect on resources for these options would be expected within this WRZ.
	9.2	**Avoid negative effects on built assets and infrastructure**	This plan is likely to result in **neutral** cumulative effects on SEA Objective 9.2 during construction. COL12, COL2 and COL9 are likely to have minor negative effects on the surrounding built environment as a result of construction traffic on local roads and towns resulting in delays, noise and vibration effects. However, due to spatial disparity across these options, no cumulative effects are anticipated. Option BNW11 is identified to have the potential for minor negative impacts during construction on SEA Objective 9.2, particularly due to the likelihood of road closures and access limitations, however cumulative effects are unlikely due to the distance from other options in the Bournemouth WRZ. WIM5 could have a moderate negative effect during construction, however due to the surrounding WIM options not requiring extensive construction or changes to existing assets, this impact is not anticipated to be exacerbated.	This plan is likely to result in a **neutra**l cumulative effect on SEA Objective 9.2 during operation. For the Bournemouth WRZ, a potential residual minor negative effect is identified in relation to Option BNW6, where long-term operational impacts relate to the potential for soil heave and resulting damage to built infrastructure, including roads. However, this effect would be expected to be localised in nature.

10.5.11 There are anticipated to be 13 negative short-term cumulative effects across the environmental SEA Objectives as a result of this Plan during construction. These include biodiversity (1.1 and 1.2), water (2.1 and 2.2), soil (3) air quality (4), climate (5.1), historic environment (6), landscape (7), population and health (8.1 and 8.2) and material assets (9.1 and 9.2), of which nine are anticipated to be moderate negative. These negative effects are prominently due to increased construction and the close proximity of options within each WRZ. Furthermore, construction activities are programmed to commence within reduced timeframes commencing in 2025 and extending across two to five years. There is anticipated to be a major negative effect associated with 'Reduce embodied and operational carbon emissions' this is due to an array of construction activities that will be required across the SWW region. Therefore, due to the potential for increased embodied carbon emissions this could contribute to an overall negative effect across the UK.

10.5.12 During construction there is the potential for major positive effects associated with population and health SEA Objectives. These are likely to arise due to the economic benefits during the construction phase.

10.5.13 Long-term operational effects are likely to be experienced with respect to 14 SEA Objectives, with ten moderate negative effects and four minor negative effects anticipated. There is specific reference to the water and climate SEA Objectives due to the options resulting in an increase in operational carbon emissions and cumulative effects experienced across several waterbodies, including Lower River Fowey, Stour (Lower) and Permian Aquifers in Central Devon (groundwater), as a result of over-abstraction. There are five positive effects attributed to SEA Objectives 1.1, 2.1, 2.3, 5.2 and 8.1 as a result of economic enhancement as a result of improved resilience during periods of drought and wider climate change benefits as a result of increased water resources / resilience providing significant increase in water availability at Roadford Reservoir and the wider SWW region.

10.5.14 Options BNW1, BNW3, COL9a/b, COL5, COL12 ROA4, ROA6, ROA8 and WIM6 are geographically diverse and therefore present limited cumulative effects.

Inter Cumulative Effects

10.5.15 Cumulative (Inter) effects of the WRMP24 with other relevant plans, programmes and projects have been considered against the methodology outlined in **Section 8.4**. These include the following:

- South West Water Final Drought Plan (2022);[50] / [51]
- South West Water Isles of Scilly Draft Final Drought Plan (September 2022)[52]
- SWW and Bournemouth Water Final Water Resource Management Plan (2019);[53]
- Neighbouring water companies' WRMP and Drought Plans:
  - Wessex drought plan; and
  - Southern Water drought plan.
- National Policy Statements[54] and National / Regional Infrastructure Plans[55];

[50] South West Water (2022) *Revised Draft South West Drought Plan.* Available at: https://www.southwestwater.co.uk/environment/a-precious-resource/drought-plan/

[51] South West Water (2022) *Bournemouth Water Final Drought Plan*. Available at: https://www.southwestwater.co.uk/siteassets/document-repository/environment/sww-bw-final-drought-plan-september-2022.pdf

[52] South West Water (2022) *Isles of Scilly Draft Drought Plan*. Available at: https://www.southwestwater.co.uk/siteassets/document-repository/environment/sww-bw-final-drought-plan-september-2022.pdf

[53] South West Water (2019) *SWW and Bournemouth water final water resource management plan*. Available at: https://www.southwestwater.co.uk/siteassets/document-repository/environment/sww-bw-wrmp19---finalplan_aug2019.pdf

[54] Planning Inspectorate *National Policy Statements*. Available at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/national-policy-statements/

[55] Planning Inspectorate *National Infrastructure Planning* Available at: https://infrastructure.planninginspectorate.gov.uk/projects/

- Canal & River Trust Management Plans[56];
- Relevant Local Development Frameworks;
- Environment Agency Drought Plan[57]; and
- Relevant Major projects.

South West Water Drought Plan (Bournemouth Water Final Drought Plan)

10.5.16 The Bournemouth Drought Plan sets out the framework of possible actions in relation to implementing drought actions for the WRZ. These include demand-side drought actions, supply-side drought actions and support to private and non-public water supplies and environmental drought.

10.5.17 The report identified four WRZ including Colliford, Roadford, Wimbleball and Bournemouth. Demand actions where feasible will be implemented prior to supply actions at the same drought level.

10.5.18 Each of the WRZs have been identified as being principally reliant on large strategic reservoirs. In line with the Environment Agency guidelines SWW have categorised drought by severity into less severe drought (Level one to very severe drought (Level three), at each level there are specific demand reduction measures should be implemented ranging from communication campaigns, increased leakage controls for level one, to temporary bans under level two and finally non-essential use bans for level three droughts. Additionally, further supply options have been identified across the supply network detailed in **Table 10.10** below.

Table 10.10: Supply Demand Options

WRZ	Drought Severity	Return Period	Actions
Colliford	Level one	>1 in 500 years	Restormel Abstraction Licence – Drought Permit to allow additional abstraction during the winter
	Level two	>1 in 500 years	Porth Reservoir and Rialton Intake – Recommissioning reservoir and former river intake
	Level three	>1 in 500 years	West Cornwall minor sources – Recommissioning of licensed, disused sources
Roadford	Level one	1 in 200 to 500 years	Roadford Reservoir Winter Pumped Storage – Drought Permit to recharge reservoir in the winter
	Level two	c. 1 in 500 years	Slade – Recommissioning of licensed, disused reservoir
	Level three	>1 in 500 years	Challacombe Reservoir – Drought permit to allow use of disused reservoir

[56] Canal and River Trust (2020) *Ways to Save Water*. Available at: https://canalrivertrust.org.uk/specialist-teams/managing-our-water/ways-to-save-water

[57] Environment Agency (2017) *Devon and Cornwall Area Drought Plan*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1107711/Devon_and_Cornwall_drought_plan_2017_withdrawn.pdf

WRZ	Drought Severity	Return Period	Actions
Wimbleball	Level one	1 in 200 to 500 years	North Exeter Boreholes – Recommissioning of licensed, disused borehole sources
	Level two	>1 in 500 years	Wimbleball Spring Sources – Drought Permit to allow additional abstraction during the winter
	Level three	>1 in 500 years	Wimbleball Compensation Flow – Drought permit to change compensation flow
Bournemouth	Level one	>1 in 500 years	N/a
	Level two	>1 in 500 years	Wimborne WTW – Recommissioning of licensed, disused well source
	Level three	>1 in 500 years	Stanbridge Licence – Drought permit to increase abstraction licence

10.5.19 The Drought Plan outlines demand measures that align with the existing proposed WRMP24 options. Whilst their concurrent implementation might exacerbate some of the potential adverse effects, specifically in relation to construction effects such as noise, air quality, community and transport nuisance associated with increased vehicles movements these are likely to be negligible and overall the positive cumulative effect of water resilience and resource availability are likely to be beneficial.

SWW Isles of Scilly Draft Drought Plan

10.5.20 The Isles of Scilly have been included as a separate section of the South West Water Drought Plan due to the geographically remote nature. A technical draft plan has been developed to set out how drought will be managed across the islands

10.5.21 Drought actions have been provided for each of the five islands including both demand and supply side actions including:

- Demand:
  - Annual media campaigns;
  - Community Drought Liaison;
  - Increased leakages controls;
  - Temporary use bans; and
  - Non-essential use bans.
- Supply:
  - Optimising sources and outage minimisation;
  - Tankering;
  - Increased storage; and
  - Approach 3rd party resource owners for potential spare water availability.

SWW and Bournemouth Water Final Resource Management Plan

10.5.22 Within the Final Resource Management Plan, SWW have considered both supply and demand-side unconstrained options. The following feasible option have been identified across the region:

- Conjunctive use and interconnection with neighbouring water companies, with a focus on-opportunities to trade across water company boundaries as well as considering new ways of working and include:
  - Gunnislake to Wessex Water bulk supply;
  - Northbridge to Wessex Water bulk supply;
  - Combined Gunnislake and Northbridge;
  - Wessex Water to SWW resilience schemes; and
  - Bournemouth WRZ bulk supply.
- 66 unconstrained customer side management options (reducing the demand of water) have been identified including: water tariffs (seasonal, time of day or rising block), efficiency communications, installation of meters, fixing leaky taps and pipes, effluent reuse, water efficiency and free water butts. Out of these options 22 have been identified as feasible with a focus on WWTW final effluent reuse and retrofitting unmetered fixtures.

Neighbouring water companies' WRMP and Drought Plans

10.5.23 The neighbouring WRMPs and Drought Plans including Southern Water and Wessex Water have been considered for potential cumulative effects.

10.5.24 The Southern Water Drought Plan[58] established in 2019 allows water companies to introduce a wider range of temporary restrictions when resources are under pressure, including temporary bans, restrictions and permits, media campaigns to influence water use, leakage control, mains pressure reduction and management. Further operational responses include:

- Maximising abstraction from run-of-river sources;
- Maximising pumping from groundwater sources;
- Increasing company transfers from areas not as at risk of drought;
- Inter-company bulk transfers including tankering (agreements with neighbouring water companies);
- Re-commissioning of unused sources;
- Enhancing abstraction at existing sources;
- Distribution network modifications;
- Construction of new satellite boreholes; and
- Wastewater recycling.

10.5.25 Southern Water have identified 70 drought management options during screening of which 20 are situated to west of the region with the potential to directly or indirectly interface with SWW. Due to the location and type of option these are not anticipated to result in any in combination effects or adverse cumulative effects. However positive effects will include the secure resilient water resources across the region.

[58] Southern Water (2019) *Drought Plan*. Available at: https://www.southernwater.co.uk/our-story/water-resources-management-plan/our-drought-plan

10.5.26 The Wessex Water Drought Plan[59] published in June 2022 outlines a number of management actions that can be taken during periods of dry weather to maintain and improve water resources including:

- Water efficiency and metering;
- Leakage management; and
- Temporary use bans.

10.5.27 Further supply side actions have been identified for operation of stream support, transfers with neighbouring water companies including Bristol Water, Thames Water, SWW, Veolia Water Projects and Southern Water and drought permits and orders. The Wessex Water WRMP19[60] outlines seven resource options including desalination, new reservoirs, river abstraction, effluent reuse and improved treatment processes. The Overall aim of the Wessex Water WRMP19 and Drought Plan aligns with the SWW vision for reducing demand and increasing water security. Therefore, no cumulative effects are anticipated as a result of the water demand and supply options.

National Policy Statements and National/Regional Infrastructure Plans

10.5.28 At the time of writing there are not anticipated to be any National or regional developments that could result in cumulative effects identified within National Policy Statements or National and Regional Infrastructure Pans. However, the following National Planning Applications have been acknowledged within the SWW region (**Table 10.11**).

Table 10.11: National Policy Planning Applications

Council district	Project Description	Licencing Authority	Status
Cornwall	A30 Chiverton to Charland Cross Scheme	Highways England	Decided
	A30 Temple to Higher Carblake Improvement	Cornwall Council	Decided
Somerset	Hinkley Point C New Nuclear Station	NNB Generation Company (HPC) Limited	Decided
	A303 Sparkford to Ilchester Dualling	Highways England	Decided

10.5.29 There are a further four development planning applications under consultation for Devon and Somerset, which may require future consultation to determine any in-combination effects with the proposed SWW WRMP24 options.

Canal & River Trust Management Plans

10.5.30 The Canal & River Trust is carrying out essential maintenance on reservoirs to ensure the long-term integrity and safe secure water supply provided to the canal network. Further initiatives include water saving aerator, not leaving water running, use most resource efficient equipment, make sure there are no leaks, minimise water use, recycle grey water. This is in line with the water supply and demand options outlined in the SWW WRMP19 and as such there is not anticipated to be any adverse cumulative effects.

[59] Wessex Water (2022) *Drought Plan*. Available at: https://www.wessexwater.co.uk/environment/water-resources/drought-plan

[60] Wessex Water (2019) *WRMP19*. Available at: https://www.wessexwater.co.uk/-/media/files/wessexwater/environment/wessex-water-final-wrmp19_01_08_2019_publicwebsite

Relevant Local Development Plans

10.5.31 The following planning websites have been reviewed to determine any cumulative and in-combination effects, including:

- Cornwall Council Local Development Plan (2016)[61] and online planning portal[62];
- East Devon District Council Local Development Plan (2016)[63] and online planning portal[64];
- Exeter City Council Core Strategy (2012)[65] and online planning portal[66];
- Mid Devon District Council Local Development Plan (2020)[67] and online planning portal[68];
- North Devon and Torridge District Councils Joint Local Development Plan (2018)[69] and North Devon District Council[70] and Torridge District Council online planning portals;
- Plymouth and South West Devon Joint Local Plan (2019)[71], Plymouth City Council[72], South Hams District Council[73] and West Devon Borough Council[74] online planning portals;
- Teignbridge District Council Local Plan (2014)[75] and online planning portal[76];
- Dorset District Council's Local Development Plans (West Dorset, Weymouth, and Portland (2016), Purbeck (2012), North Dorset (2016), East Dorset and Christchurch (2014), and Swanage (2017)))[77] and online planning portal[78];
- Somerset Recovery and Growth Plan[79] and online planning portal[80];
- Somerset District Council's Local Development Plans (Mendip (2021), Sedgemoor (2019), South Somerset (2015) and Somerset West and Taunton (2016))[81] and

[61] Cornwall County Council Local Development Plan (2016). Available at: https://www.cornwall.gov.uk/media/ozhj5k0z/adopted-local-plan-strategic-policies-2016.pdf

[62] Cornwall County Council Planning Portal (2023). Available at: https://www.cornwall.gov.uk/planning-and-building-control/planning-applications/online-planning-register/

[63] Devon County East Devon Local Development Plan (2016). Available at: https://eastdevon.gov.uk/media/1772841/local-plan-final-adopted-plan-2016.pdf

[64] East Devon District Council Planning Portal (2023). Available at: https://eastdevon.gov.uk/planning/

[65] Exeter City Council Core Strategy (2012). Available at: https://www.exeter.gov.uk/media/1636/adopted-core-strategy.pdf

[66] Exeter City Council Planning Portal (2023). Available at: https://www.exeter.gov.uk/planning-services/

[67] Mid Devon District Council Local Development Plan (2020). Available at: https://www.middevon.gov.uk/media/350631/local-plan-review-final-adopted-version_accessible.pdf

[68] Mid Devon District Council Planning Portal (2023). Available at: https://www.middevon.gov.uk/residents/planning/

[69] North Devon and Torridge District Councils Joint Local Development Plan (2018). Available at: https://consult.torridge.gov.uk/kse/folder/91954

[70] North Devon District Council Planning Portal (2018). Available at: https://planning.northdevon.gov.uk/Search/Advanced

[71] Plymouth and South West Devon Joint Local Development Plan (2019). Available at: https://www.southhams.gov.uk/jointlocalplan

[72] Plymouth City Council Planning Portal (2023). Available at: https://www.plymouth.gov.uk/planning-applications

[73] South Hams District Council Planning Portal (2023). Available at: https://www.southhams.gov.uk/planning-comment

[74] West Devon Borough Council Planning Portal (2023). Available at: https://www.westdevon.gov.uk/planning-comment

[75] Teignbridge District Council Local Development Plan (2014). Available at: https://www.teignbridge.gov.uk/media/1669/local-plan-2013-33.pdf

[76] Teignbridge District Council Planning Portal (2023). Available at: View and comment on planning applications and appeals - Teignbridge District Council

[77] Dorset District Councils Local Development Plans (various). Available at: https://www.dorsetcouncil.gov.uk/adopted-local-plans

[78] Dorset Council Planning Portal (2023). Available at: https://www.dorsetcouncil.gov.uk/planning-buildings-land/planning/planninghttps://www.dorsetcouncil.gov.uk/planning-buildings-land/planning-policy/dorset-council-local-plan/about-the-dorset-council-local-plan-january-2021-consultation

[79] Somerset County Council Recovery and Growth Plan (2021). Available at: https://www.somerset.gov.uk/business-and-economy/somerset-growth-plan/#:~:text=The%20Plan%20is%20based%20on%20detailed%20economic%20analysis,well%20as%2C%20longer%20term%20strategic%20ambitions%20for%20growth

[80] Somerset County Council Planning Portal. Available at: https://planning.somerset.gov.uk/

[81] Somerset District Councils Local Development Plans (various). Available at: https://www.somerset.gov.uk/waste-planning-and-land/planning-policy/

- Bournemouth (2012), Christchurch (2014) and Poole (2018) (BCP Council) Local Development Plans [82] and online planning portal[83].

10.5.32 Following the review of each council's local development plans and growth plans the following developments have been identified across the region, for example building refurbishment and extensions, removal of derelict roofs, tree conservation and due to the nature of these developments they are not deemed appliable of any in-combination effects. However, the following EIA screening requests and application detailed in **Table 10.12**, may present a risk of cumulative effects and should be monitored for future cumulative effects:

Table 10.12: Local developments

Council	Proposed Development	Application Number	Date of initial submission
Devon	EIA screening request for proposed reinstatement of Stover Serpentine Lake	PRE/1587/2022	13 April 2022
Cornwall	Pre-application advise for full application for an affordable housing led development of 32 dwelling and associated situated west of Tregarthen Two Burrows Balckwater Cornwall TR48HN	PA22/00982/PREAPP	06 June 2022
	Construction of new sea wall in front of the existing one (Old Kiln Rock Road Rock Wadebridge), to protect the SWW Sewage Pumping Station and the neighbouring property	PA22/03166 (Awaiting decision)	20 May 2022
	Conversion of the Old County Hall (Truro) to provide 34 residential dwelling and a further new build for an additional 45 dwellings, car park and surface water drainage and landscaping	PA21/11890 (Awaiting decision)	22 February 2022
	Outline approval with all matters other than access for 435 dwelling, nursing home, food store, petrol station, schools, community facilities, restaurants, public spaces foul and surface water drainage.	PA21/04337 (Awaiting decision)	02 September 2021
	Outline application for a mixed development for up to 134 residential dwellings, commercial use, vehicular access, pedestrian/ cycleway link,	PA21/02574 (Awaiting decision)	01 August 2021

[82] Bournemouth, Christchurch and PBCP) Council Local Development Plans. Available at: https://www.bcpcouncil.gov.uk/Planning-and-building-control/Planning-policy/Current-Local-Plans/Current-Local-Plan.aspx

[83] Bournemouth, Christchurch, and Poole (BCP) Council Planning Portal (2023). Available at: https://www.bcpcouncil.gov.uk/Planning-and-building-control/Planning-and-building-control.aspx

Council	Proposed Development	Application Number	Date of initial submission
	play areas and foul and surface water drainage.		
Somerset	Floodplain Compensation Scheme: Brains Farm, Moor Lane, Wincanton, BA9 9RA.	12/03257/CPO (granted)	27/07/2022
	St Dunstan School BA6 9BY – Sustainable Surface Water Drainage Scheme.	SCC/3892/2021 (granted)	14/07/2022
	Parkfield County Primary School Parkfield Road Taunton Somerset TA1 4RT – Surface Water Drainage.	SCC/3853/2021 (granted)	24/06/2022

Environment Agency Drought Plan

10.5.33 The Environment Agency is noted as being responsible for safeguarding water resources in England and protecting the environment, with water companies ultimately responsible for managing water supplies to meet the needs of customers. The Drought Response: Our Framework for England (2017)[84] has been consulted to provide a strategic overview for how drought will be managed to minimise damage to the environmental and to secure essential public water supply.

10.5.34 The following measures have been identified as ways in which water companies can manage demand and increasing supply across their respective regions:

- Investing in new sources and supply mains;
- Maximising river abstractions and conserving reservoir storage;
- Transferring bulk supplies between water companies;
- Using peak sources;
- Moving water between supply zones to balance risk;
- Planning capital investment for severe drought scenarios;
- Working with other water companies and abstractors to identify new opportunities to share water;
- Reinforcing existing water efficiency activities;
- Reducing leakage below target levels;
- Targeting domestic metering in areas of water stress;
- Managing water pressure;
- Working with business customers to help reduce their demand; and
- Introducing temporary use bans.

10.5.35 The Devon and Cornwall Area Drought Plan (2017)[85] has also been reviewed for the potential for in-combination effects of the preferred plan with drought options. The Drought Plan was

[84] Environment Agency (2017) *The Drought response: our Framework for England*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/625006/LIT_10104.pdf

[85] Environment Agency (2017) *Devon and Cornwall Area Drought Plan*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/732390/DC_Drought_Plan_July_2017.pdf [note withdrawn Sept 2022, however new version not yet released]

withdrawn in September 2022; however a new version has not yet been released. The 2017 plan has therefore been included for consideration of cumulative effects, as it represents the most recent available information. The new Drought Plan should be reviewed when published to reflect changes that have been made in the intervening period and ensure that the cumulative assessment remains valid.

10.5.36 The focus of the Drought Plan is the regulation of both public and private water supply with the following actions management (resolving drought issues, document key decisions and carry out post drought reviews); monitoring (co-ordinate additional monitoring, monitor relevant drought triggers, monitor the outcome of drought actions, ensure baseline environmental monitoring is adequate for assessing drought impacts); operational (follow Environment Agency incident management procedures, implement our drought actions, monitor compliance and enforce abstraction licences and drought permits / order conditions, monitor water companies compliance and monitor drought activity in other areas where operational activity may impact customers); and communication (regular reporting, co-ordinate public relations, communicate with local and national stakeholders, share information, co-ordinate the area input into drought related reports and briefs, communicate drought activity).

10.5.37 These mechanisms offer the potential for positive in-combination effects with SWW WRMP24 as drought management and communication messages may reinforce the need for increased water efficiency, metering and drought monitoring, resulting in increased demand savings and greater stakeholder desire to conserve water resources. During this review, no cumulative adverse effects have been identified in relation to the current Environment Agency Drought Plan.

Major Projects

10.5.38 Further review and assessment may be required to determine the potential for cumulative effects with other major other major projects, to include existing completed projects, approved and ongoing projects, plans or projects under consideration by consenting authorities and plans and projects that are reasonably forceable (projects which may not have submitted their application but are likely to progress in conjunction with SWW WRMP24 development, for which sufficient information is available to assess the likelihood of cumulative and in-combination effects).

10.5.39 At the time of writing no major projects have been identified.

10.5.40 Following the determination of the preferred plan and respective options, further consideration should be taken to assess any updates to local / regional plans, programmes and / or projects such as Local Development Plans and neighbouring WRMPs which could present increased or new cumulative effects.

10.6 Reasons for Selecting Preferred Plan

10.6.1 The SEA has informed the development of the draft WRMP24 in a number of ways. In terms of the development of individual options, a high-level red-amber-green (RAG) screening[86] was undertaken as a precursor to the full SEA assessments, which involved an initial assessment of the unconstrained list of options to identify high environmental risks. This supported decision-making on the options, with BNW4 removed due to the high-level screening results. Options that had themes flagged as high risk were reviewed with SWW during a workshop in April 2022, and were retained at the time as options for further assessment.

[86] Mott MacDonald (2022). *South West Water WRMP24 Strategic Environmental Assessment (SEA) High-Level Screening Summary Report (100107117-MMD-RP-SEA-004-B).*

10.6.2 Following this, the SEA process directly shaped the option development as environmental constraints and identified risks were used to inform option detail. This included amending infrastructure locations such as pipeline routes and intake locations, thus avoiding sensitive areas and reducing the need for mitigation. This was undertaken by the SEA team and SWW.

10.6.3 Additionally, the findings of the SEA and other technical environmental assessments (i.e. HRA, WFD, INNS, BNG/NCA) were fed back to SWW for further consideration and option refinement. Collaborative meetings with option engineering teams have been held through the process, with SWW engineering teams building on the SEA findings in terms of option locations, risks and opportunities. The revised options then undergo re-assessment for the SEA to ensure the findings remain relevant.

10.6.4 For the selection of preferred plan and alternatives, SWW undertook modelling based on data for the individual options. The Best Value Plan is the preferred plan for the draft WRMP24. The Best Value approach is split into three dimensions: environment, resilience, and society. It aims to develop a plan which provides a sufficient and reliable water supply for the region, at the best value for revenue invested. This means that the Best Value Plan considers additional factors other than the lowest cost method to avoid or minimise water deficit.

10.6.5 The findings of the SEA and technical environmental assessments were incorporated into the SWW model under the environment element (as per the methodology set out in **Section 8.7**), and therefore directly feed into and inform plan selection. This included findings from the following assessments:

- SEA, which includes consideration of the HRA, WFD and INNS assessments (positive and negative short-term and long-term effects);
- BNG units & NCA (environmental – includes financial metrics (carbon storage, natural hazard management, air pollutant removal and food production) and also qualitative scores (water regulation and water purification));
- NCA (social – recreation/amenity financial metric); and
- Carbon (embodied and operational).

10.6.6 The Least Cost Plan forms an alternative plan and is the combination of options which requires the lowest level of revenue to meet the required water supply. The Least Cost Plan was reached using the model-only output. This plan was not selected as the preferred plan as it did not include any consideration of environmental, resilience or social impacts, and would have poorer environmental performance than the Best Value Plan.

10.6.7 At the time of writing, the Worst Case Plan formed the second alternative plan for the WRMP24 and assumed that high climate change, and its associated effects, impact the water available for use (WAFU) and demand. This is not currently forecast as the most likely scenario, so has not been progressed as the preferred plan as it would potentially require greater expenditure and impacts to facilitate the supply of more water than is required in the area. SWW's work on alternative plans has remained ongoing and any new alternative plans will be fully assessed and incorporated into the next version of this Environmental Report.

10.6.8 At this stage, SWW has completed two iterations of modelling. It is important to note that the Best Value Plan contains options which were selected due to stakeholder opinions and preferences. The Best Value Plan was reviewed and updated during December 2022.

10.6.9 The modelling approach is currently under revision to allow input of positive and negative SEA modelling values separately for each option, for both short and long term. This is expected to better reflect the SEA findings by separating construction and operational effects, and avoiding cancelling out of positive and negative effects. The updated model is expected to be used through spring 2023 to further refine the preferred plan.

Removed Options

10.6.10 Following the high-level screening of significant environmental constraints and ongoing option development by SWW, some options originally identified by SWW were not progressed. The following options initially underwent assessment but were determined as not suitable and have therefore not been considered further within this Environmental Report:

- **BNW2 – Stanbridge, part of revised use of Stour, smarter conjunctive use of the Stour sources:** Moving the licence will not increase the water available.
- **BNW4 – Woodgreen, New borehole development:** Groundwater modelling results indicated no potential for additional abstraction in the main chalk aquifer to protect the environment. High level environmental screening also highlighted several issues.
- **BNW5 – Hydrogeological survey of whole area:** Groundwater modelling results indicated no potential for additional abstraction in the main chalk aquifer to protect the environment.
- **BNW9 – Woodgreen, hydraulic restriction:** Issues are being resolved within the current AMP.
- **BNW10 – Christchurch WWTW IPR 1 Transfer to River Avon:** This is due to environmental reasons as the option identified significant uncertainty from potential discharge into the lower River Avon to augment flows being deemed unacceptable due to the river's designation.
- **BNW12 - Holdenhurst WWTW IPR 1, additional treatment at Holdenhurst before pumped transfer to the River Avon:** Discharge into lower River Avon to augment flows is not acceptable in a designated river. Natural England have indicated this scheme would not be acceptable.
- **BNW13 – Holdenhurst WWTW IPR 2 Transfer to Longham Lakes:** Has been removed due to significant uncertainty around the option, due to no feasible pipe routes being identified between Holdenhurst and Longham.
- **BNW15 – New reservoir in the upper Dorset Stour:** Following site visits and detailed review this site and other sites have been deemed technically infeasible for potential development. Wessex Water in collaboration with SWW have removed this option from their WRMP24 plan. Adaptive planning work will be included in next 5 years.
- **COL1 - Restormel annual licence increase:** Recent discussions with the Environment Agency over environmental destination and risk of deterioration highlighted their concerns over additional abstraction from the Fowey. Included in WINEP24 so studies proposed in AMP8.
- **COL7 - Colliford - Pit Option 1: Transfer to WTW:** There is no likelihood of access to water from this pit in the short to medium term due to ownership reasons.
- **COL8 - Colliford - Pit Option: On site treatment and transfer to Service Reservoir:** There is no likelihood of access to water from this pit in the short to medium term due to ownership reasons.
- **COL10a - Pit, Treat onsite:** Site not available for use due to ownership reasons.
- **COL10b - Pit, Transfer and treat at WTW:** Site not available for use due to ownership reasons.
- **COL13 - Drift network improvements:** Demand analysis indicates likely increases in the Drift supply area which would remove any surplus available for transfer.
- **COL14 – Restormel, Improve site water efficiency and reduce site losses:** Current works on identified issues will be completed 2022. Other improvements have been included in the scoping and costing for option COL15.

- **COL16 - College WTW improvements:** Capital scheme to deliver quality improvements at the site has recently been completed. Extended period of re-commissioning is required to see if there is any scope for additional resource availability. Potential to review for WRMP29.
- **COL17 - Stithians WTW, reduce WTW minimum capacity:** Further investigations revealed that the minimum WTW capacity is lower than understood. There is no longer potential to gain resource through this approach at this site.
- **ROA1 - Dart intake licence increase:** Recent discussions with the Environment Agency over environmental destination and risk of deterioration highlighted their concerns over additional abstraction from the Dart. Included in WINEP24 so studies proposed in AMP8.
- **ROA5 - Purchase quarry or lease the water:** Site not available for use due to ownership reasons.
- **ROA9 - Upper Tamar WTW, reduce WTW minimum capacity:** Further investigations revealed that the minimum WTW capacity is lower than understood. There is no longer potential to gain resource through this approach at this site.
- **WIM3 - Hook springs annual abstraction increase:** Due to concerns over the impact on the River Kit the Environment Agency have confirmed that Hook Springs should be included in WINEP24.

11 Mitigation and Monitoring

11.1 Mitigation and Enhancement Measures

11.1.1 Mitigation measures and enhancement opportunities are identified in the individual option assessments and in the in-combination effects assessment. HRA AA, WFD Level 2 Assessments and INNS Assessments were required for a number of the selected options and specific mitigation was developed as part of this process and included in the detailed SEA options assessment matrices.

11.1.2 A summary of the high-level plan-wide measures is provided below:

Biodiversity, flora and fauna

- Where potential major negative impacts on designated and non-designated ecological sies could be expected (e.g. Option ISB5), CIRIA guidance would be followed to help alleviate impact pathways during construction, e.g. through planning the construction programme to avoid breeding birds period (March to August inclusive). If construction does occur, additional data could be required to determine presence of qualifying features.
- Best practice construction and mitigation methods would be implemented to minimise disturbance effects (e.g. dust suppression and pollution control measures).
- Measures from the CEMP would be followed to ensure compliance and best practice.
- Trenchless techniques would be implemented where feasible to reduce the level of disturbance to habitats within close vicinity of the site.
- Habitat would be reinstated on completion of developments, or if unavoidable impacts, compensatory habitat to be considered to replace damaged or lost habitat in line with BNG requirements.
- Where possible, development on priority habitat would be avoided to minimise effects.
- For various options, ecology surveys would be required at future design stages to determine effects and mitigation required.
- Best practice and consultation of the INNS risk assessment would help minimise spread of INNS. Construction sites to follow best practice biosecurity measures.
- Consultation with statutory bodies would be undertaken to ensure impacts to protected species and habitats are avoided or mitigated appropriately according to statutory requirements.

Water

- Best practice construction methods are assumed to be implemented to minimise water deterioration (e.g., dust suppression, pollution control measures).
- Measures from the CEMP would be followed to ensure best practice.
- For certain options, groundwater levels and quality would be carefully monitored throughout operation and the monitoring criteria should be agreed with relevant authorities to minimise the long-term effects on water quality and water resources.
- The quality of seawater at certain options (e.g. Option ISMY3) would be carefully monitored throughout operation to minimise long term effects on water quality and water resources.
- To reduce impacts on GPZs, option location would be considered as well as pipeline alignment and trenchless techniques where applicable.
- For certain options, risk assessments would be undertaken for excavation works and dewatering to ensure no adverse effects on watercourses. Measures identified within the CEMP to manage surface run off would be implemented to reduce risk.

Soil

- Best practice mitigation measures would be implemented during the construction phase (stripping, stockpiling, the conservation of topsoil and subsoil etc).
- Construction on greenfield land would be avoided where possible, to reduce the impacts on undisturbed soils.
- Reinstatement of land excavated for the pipeline to minimise land take and disturbance.
- During operation, careful monitoring of abstraction via the borehole would be implemented to avoid the any impacts on soil subsidence.

Air

- Best practice mitigation measures are to be implemented to mitigate potential air quality effects arising from construction works and increased vehicular movement. These mitigation measures would also include dust suppression and pollution control measures.

Climatic factors

- Investigate the use of substitute materials with lower embodied carbon and use of renewables to power new facilities.
- In general, decarbonisation of the national grid is likely to help reduce future carbon emissions.
- For certain options, the water levels should be carefully monitored during operation to ensure they remain at an appropriate level. Best practice measures should be applied to prevent over abstraction and negative impacts on the environment.

Historic Environment

- The location of boreholes, associated infrastructure, and pipelines (where applicable) should be carefully considered to minimise the effects on the historic environment.
- If the historic environment is likely to be detrimentally affected, re-routing pipelines should be considered. If this is not possible then careful consideration and reinstatement to its original condition should take place, with no detrimental effect on the character or area.
- Regarding certain options, e.g. Option ISB4, additional baseline collection and assessment should be undertaken to determine any additional potential effects on water-dependant heritage assets and water sensitive historic environments to be identified.
- Where specific historic assets could be directly impacted by development, options should be placed as far away as possible from the asset (e.g. Option ISB3).
- Consultation with statutory bodies would be undertaken to ensure impacts to heritage assets are avoided or mitigated appropriately according to statutory requirements.

Landscape

- Best practice construction methods to be implemented to minimise any effects on landscape and visual amenity (measures from the CEMP should be followed).
- Where possible, locate new infrastructure close to existing above ground-built assets, as this could lower the long-term impacts on visual amenity.

Population and human health

- Best practice construction methods to be implemented to minimise the impacts on the health and well-being of the local community.
- Where applicable, route realignment to be amended or trenchless techniques to be used to avoid direct impacts on property and community assets.
- It is recommended that standards from the Considerate Constructors Scheme are followed to ensure best practice.

Material assets

- Where possible, seek opportunity to implement sustainable design measures (design to reduce footprint, selection of materials) and reuse excavated material to reduce the impact.
- Best practice construction and mitigation measures to be implemented, including a Traffic Management Plan to minimise disturbance during construction.
- Investigate the use of renewables to power the construction machinery and new facilities during operation.

11.2 Monitoring Proposals

11.2.1 Monitoring will be carried out by SWW as part of their WRMP processes. 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 WRMP24 is being successfully implemented. The DCLG guidance[87] 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.
- Significant environmental effects 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.

11.2.2 The following monitoring measures are proposed for the WRMP24 SEA, as set out in **Table 11.1** below.

Table 11.1: SEA Monitoring Measures

SEA Objective	Monitoring Measure
Biodiversity, flora and fauna	% 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 WRMP24 options
	Area of both blue and green infrastructure created
Water	Achievements against WFD objectives
	Ecological and chemical status of water bodies
	River flow levels
	Lake and reservoir levels
	Groundwater levels
	Number of supply disruptions per annum
Soils	Area of agricultural land (by grade) lost due to the need for water resource options/infrastructure
	Number of geological sites affected
Air	SWW vehicle distance travelled (km)
Climatic Factors	Reduction of GHG emissions per Ml/d
	Energy use from new operations and change in energy use per Ml/d

[87] DCLG (2005) A Practical Guide to the Strategic Environmental Assessment Directive. Available at: https://www.gov.uk/government/publications/strategic-environmental-assessment-directive-guidance. Date accessed: 26/09/22

SEA Objective	Monitoring Measure
	% energy supplied by renewable sources
	Reduction of operational and capital carbon emissions
Historic Environment	Number of heritage assets adversely affected by WRMP24 options
	Number of heritage assets enhanced by WRMP24 options
Landscape	Number of landscapes, townscapes and seascapes adversely affected by WRMP24 options
	Number of landscapes, townscapes and seascapes enhanced by WRMP24 options
Population and Human Health	Number of, and attendance levels at, public engagement events
	Number of apprenticeships
	Km of new footpath/cycleways
	Number of tourism assets created or enhanced
	Number, type, and area of community assets created
Material Assets	% 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 %

12 Consultation and Next Steps

12.1 SEA Environmental Report Consultation

12.1.1 The SEA Environmental Report (this document) has been issued for a three-month consultation period from February to May 2023 to the three statutory bodies: the Environment Agency, Natural England and Historic England, as well as being made available to wider stakeholders.

12.1.2 SWW welcomes your views on the SEA Environmental Report on the following key questions:

- Do you have any comments on the effects identified in the SEA?
- Do you have any comments on the proposed mitigation measures?
- Do you have any comments on the assessment of the preferred plan (Best Value Plan)?

12.1.3 Following the Environmental Report consultation period, all consultation responses will be carefully reviewed and tabulated, and taken into account as far as possible. Any significant alterations to the SWW draft WRMP24 as a result of the consultation will be assessed in terms of their environmental implications and influence on the revision of the WRMP24. The final SEA Environmental Report will be amended as necessary to reflect any changes.

12.2 Next steps

12.2.1 Following the consultation period, a consultation log of responses will be produced and will record the comments received from the Statutory Consultees and other stakeholders 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.

12.2.2 As the draft WRMP24 is further developed the SEA will be updated to reflect the selected options and potential in-combination effects. The Environmental Report will be updated to take into account any changes in the draft WRMP24 as it develops into the final Best Value Plan. Alongside this the HRA AA, WFD Level 2 assessments, NCA/BNG assessments and INNS risk assessments will be updated to reflect changes to WRMP24 options, and the results used to inform the plan development and SEA.

12.2.3 Following adoption of the SWW WRMP24, a Post-Adoption Statement will be produced which outlines how the SEA process has influenced the development of the WRMP, how consultation comments were taken into consideration and how the WRMP24 will be monitored. This summary will provide enough information to make it clear how the SWW WRMP24 was influenced as a result of the SEA process and consultation.

12.2.4 Stage E ‘Monitoring implementation of the plan’ of the SEA process will be carried out by SWW when the WRMP24 is implemented. Monitoring of the WRMP24 will be incorporated with SWW’s annual monitoring processes to help ensure positive sustainability outcomes for the WRMP24.

Appendices