MOTT MACDONALD

Anglian Water Revised Draft Water Resource Management Plan 2024

Environmental Report

August 2023

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Environmental Report

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Contents

Tables

Abbreviations

AA	Appropriate Assessment
ACWG	All Companies Working Group
AONB	Area of Natural Beauty
AQMA	Air Quality Monitored Areas
BNG	Biodiversity Net Gain
BVP	Best Value Plan
CEMPs	Construction Environment Management Plans
CTMPs	Construction Traffic Management Plans
DLUHC	Department for Levelling Up, Housing and Communities
DMP	Dust Management Plan
EA	Environment Agency
EAR	Environment Assessment Report
EBSD	Economics of Balancing Supply and Demand
ECJ	European Court of Justice
EIA	Environmental Impact Assessment
ENCA	Enabling a Natural Capital Approach
ENG	Environmental Net Gain
ESW	Essex and Suffolk Water
ET	Environmental Targets
EU	European Union
GIS	Geographic Information Systems
HRA	Habitats Regulations Assessment
IEA	Integrated Environment Assessment
INNS	Invasive Non-Native Species
LPA	Local Planning Authority
MCZ	Marine Conservation Zones
MPA	Marine Protected Areas
NCA	Natural Capital Assessment
NEA	National Ecosystem Assessment
NERC	Natural Environment and Rural Communities
NNR	National Nature Reserves
NRN	Nature Recovery Network
NSN	National Site Network
ODPM	Office of the Deputy Prime Minister
PPPs	Plans, Policies and Programmes

RAPID	Regulatory Alliance for Progressing Infrastructure Development
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
SPZ	Source Protection Zones
SRO	Strategic Resource Option
SSSI	Site of Special Scientific Interest
ToLS	Test of Likely Significance
UKWIR	UK Water Industry Research
WFD	Water Framework Directive
WFDA	Water Framework Directive Assessment
WINEP	Water Industry National Environment Programme
WRE	Water Resources East
WReN	Water Resources North
WRMP	Water Resource Management Plan
WRPG	Water Resources Planning Guideline
WRSE	Water Resources South East
WRZ	Water Resource Zone
WTWs	Water Treatment Works
ZoI	Zone of Influence

1 Introduction

1.1 Introduction

1.1.1 Anglian Water is the largest water and wastewater company in England and Wales geographically, covering 20% of the land.

1.1.2 Water companies have a statutory obligation to produce a Water Resources Management Plan (WRMP). The WRMP sets out how a sustainable and secure supply of clean drinking water will be provided to its customers over a minimum 25-year period.

1.1.3 In the development of a WRMP, companies in England and Wales must follow the Environment Agency/Ofwat Water Resources Planning Guideline (WRPG)[1] and consider broader government policy objectives and adhere to the relevant legislation. The guidelines highlight that where required companies must carry out a Strategic Environmental Assessment (SEA) for their WRMP. A non-technical summary of the approach and findings has been produced as part of this process and is available alongside this report as a separate downloadable document.

1.1.4 The objective of SEA, as set out in Article I of the SEA Directive (European Directive 2001/42/EC)[2] from which the 2004 SEA Regulations[3] are derived, is '*to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development*…'.

1.1.5 In order to achieve this, the Environmental Assessment of Plans and Programmes Regulations 2004 ('the 2004 SEA Regulations') (as amended) require that plans and programmes undergo environmental assessment. It suggests that amongst other factors, biodiversity, human health, population, cultural heritage and water should be included.

1.2 The WRMP Environmental Assessment – led by SEA

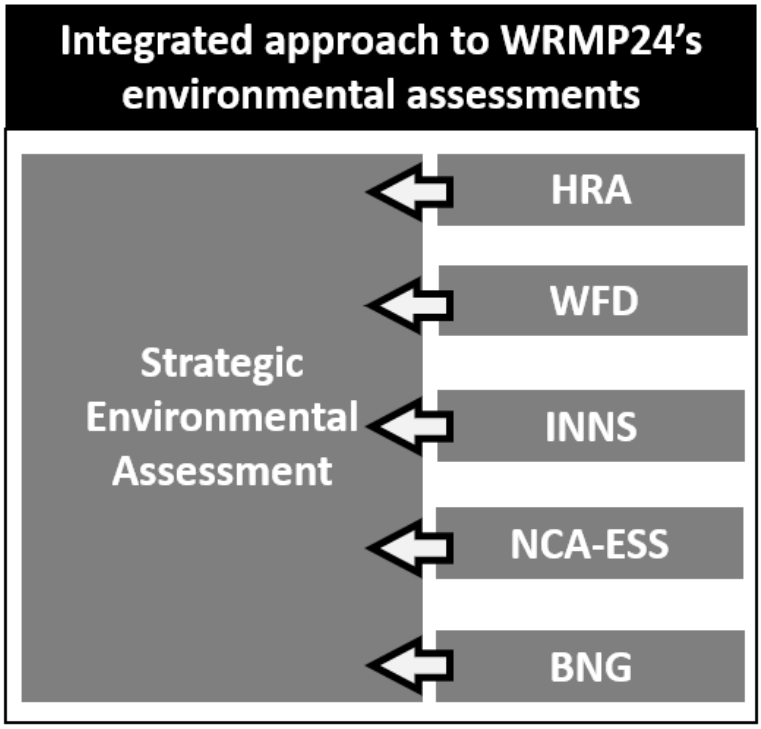
1.2.1 The environmental assessment of Anglian Water's WRMP24 involved a fully integrated approach (see Figure 1.1) to meet the WRPG guidelines across six environmental assessment processes. Each of the following assessment processes integrate their findings into the relevant aspect of the SEA framework: Habitats Regulations Assessment (HRA), Water Framework Directive (WFD) assessment, Invasive Non-Native Species (INNS) risk assessment, Natural Capital Assessment via Ecosystem Services (NCA-ESS) and Biodiversity Net Gain (BNG) assessment.

[1] Environment Agency, Natural Resources Wales, Office for Water Services (2023). Water resources planning guideline. Available at: Water resources planning guideline - GOV.UK (www.gov.uk).

[2] The European Parliament and the Council of the European Union (2001). Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment. *Official Journal of the European Communities.* Available at: EUR-Lex - 32001L0042 - EN - EUR-Lex (europa.eu).

[3] The Environmental Assessment of Plans and Programmes Regulations 2004, UKSI: 2004-1633. Available at: https://www.legislation.gov.uk/uksi/2004/1633, Note that SI1656/2004 is amended by SI245/2019, SI734/2020 and SI1531/2020

Figure 1.1: An Integrated Approach to Environmental Assessment



Source: Mott MacDonald 2022

1.2.2 The five wider environmental assessments informing the SEA, form standalone assessments in their own right. Their approach, methods and findings are in sub-reports presented within the envelope of this Environmental Report (see sub-reports A-D). This Environmental Report, and the sub-reports related to the other environmental assessments, form part of rdWRMP24's documentation, as set out in Figure 1.3, presented at the end of this Section.

1.2.3 A SEA is required for the Anglian Water WRMP24 under the 2004 SEA Regulations which apply in England and require an assessment of the effects of certain plans and programmes on the environment. While Directive 2001/42/EC originated from the European Union (EU), it continues to apply after the EU (Withdrawal) Act 2018 came into force as one of the retained EU laws.

1.2.4 Regulation 5 (Article 3 in the Directive) of the 2004 SEA Regulations requires that SEA shall be carried out for plans and programmes which are prepared for water management, which set the framework for development consents, and are likely to have significant environmental effects.

1.2.5 The SEA also works to inform the plan-making process through the identification and assessment of effects a plan or programme may have on the environment, including cumulative effects. Details of the influence the environmental assessment process had on Anglian Water's WRMP24 plan-making are presented in Chapter 5 of this report. The SEA process is conducted at a strategic level and enables consultation on the potential effects of a plan with a wide range of stakeholders. Figure 1.2 presents the different stages in the SEA process.

1.2.6 To support development of the WRMP24, Anglian Water commissioned Mott MacDonald to conduct a SEA.

1.2.7 The Anglian Water WRMP24 SEA was carried out in accordance with the following guidance:

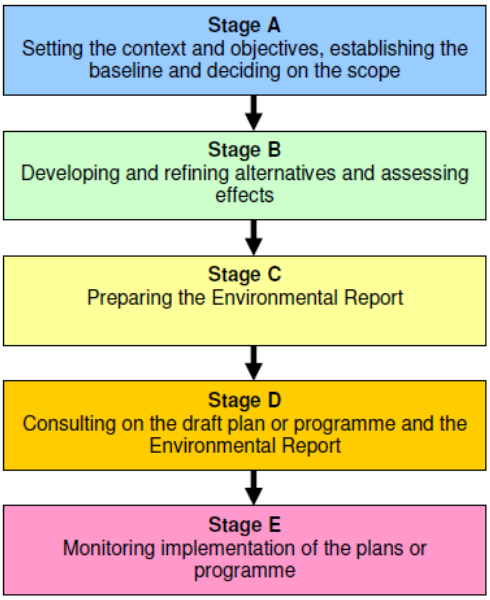
- Water Resource Planning Guidelines: WRMP24 (version 12) (Environment Agency, Natural Resources Wales, Ofwat)

- Environment Agency (2020) Water resources planning guideline supplementary guidance – Environment and society in decision-making
- UK Water Industry Research (UKWIR) (2021) Environmental Assessment Guidance For Water Resources Management Plans And Drought Plans (ref. 21/WR/02/15)
- UK Water Industry Research (UKWIR) (2012) Strategic Environmental Assessment and Habitats Regulations – Guidance for Water Resources Management Plans and Drought Plans (ref. 12/WR/02/7)
- Office of the Deputy Prime Minister (ODPM) (now the Department for Levelling Up, Housing and Communities (DLUHC)) (2005). A Practical Guide to the Strategic Environmental Assessment Directive
- Department for Environment Food and Rural Affairs (Defra) (2023) Environmental Improvement Plan 2023
- All Company Working Group (2020) Strategic Environmental Assessment: Core Objective Identification

The process has also taken into account more specific topic related guidance relevant to SEA practice, including:

- Environment Agency (2011) Strategic environmental assessment and climate change: guidance for practitioners
- Historic England (2016) Sustainability Appraisal and Strategic Environmental Assessment – Historic England Advice Note 8

Figure 1.2: Stages in the SEA process



Current Status

The SEA for the WRMP24 is currently in Stage D of the SEA process. The Environmental Report was issued for consultation alongside the Draft WRMP 2024. This updated Environmental Report is issued alongside the Revised Draft WRMP24.

Source: Adapted by Mott MacDonald from the DLUHC SEA Guidance 'A Practical Guide to the Strategic Environmental Assessment Directive'.

1.3 Purpose of the Environmental Report

1.3.1 Regulation 12 of the 2004 SEA Regulations requires that an Environmental Report is prepared as part of the assessment (Stage C in Figure 1.2). The Environmental Report should address 'the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives…'. This Environmental Report has been prepared in accordance with the requirements of the 2004 SEA Regulations.

1.3.2 The purpose of this Environmental Report is to assess the rdWRMP24 Best Value Plan and reasonable alternatives, to identify likely significant effects (positive and negative). This has been enabled through the following Environmental Assessment process:

- Assessments of the key components of the WRMP
- Options-level assessments (including SEA, HRA, WFD, Natural Capital via Ecosystem Services, BNG, and INNS assessments)
- Plan level assessment (Programme Appraisal) including cumulative and in-combination effects for SEA, HRA, WFD, NCA-ESS, BNG, and INNS

1.3.3 Anglian Water has been actively developing the WRMP24 for some time, in line with the regulator defined timetable, a Draft WRMP and Environmental Report were the subject of a 14 week formal period of public consultation from December 2022 to March 2023. The rdWRMP24 and updated Environmental Report have been prepared to address points raised in consultation on the Draft WRMP and subsequent updates made in preparing the rdWRMP24. In response to comments received during the consultation period this updated Environment Report provides a greater focus on:

- Demonstrating how environmental and social considerations have influenced the development of WRMP24
- Presenting the likely significant effects of rdWRMP24, and reasonable alternatives, as a whole plan

1.3.4 The rdWRMP24 and this Environmental Report will be issued to Defra in August 2023. See Chapters 2 and 3 for more information on the rdWRMP24 and consultation responses.

1.3.5 To produce this Environmental Report, Mott MacDonald has relied on published data and information provided by Anglian Water and from third party organisations, Mott MacDonald has also used its own professional judgement to reach its conclusions. The baseline information collected is the most up-to-date available at the time of writing, however it is possible that conditions described in this report may have changed or will change over the plan period. In particular, the position on policies, plans and programmes can change regularly and this poses challenges in a report such as this.

1.4 Compliance with the 2004 SEA Regulations

1.4.1 The Environmental Report has been prepared in accordance with the requirements of the 2004 SEA Regulations. Table 1.1 indicates where the specific requirements in the 2004 SEA Regulations relating to the Environmental Report (2004 SEA Regulations Schedule 2) can be found within this report.

Table 1.1: 2004 SEA Regulations Requirement Signposting Table

SEA Regulations Environmental Report Requirements	Section of Environmental Report where Requirement is Addressed
An outline of the contents, main objectives of the plan or programme and relationship with other relevant plans and programmes	Chapter 2 and Section 3.3
The relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme	Section 3.4 and Appendix D
The environmental characteristics of areas likely to be significantly affected	Section 3.4 and Appendix D
Any existing environmental problems which are relevant to the plan or programme including, in particular, those relating to any areas of a particular environmental importance, such as a European site (within	Section 3.4, Appendix D, sub-report A – *Habitats Regulation Assessment*, and sub-report B – *Water Framework Directive Assessment*

SEA Regulations Environmental Report Requirements	Section of Environmental Report where Requirement is Addressed
the meaning of regulation 8 of the Conservation of Habitats and Species Regulations 2017)	
The environmental protection objectives, established at international, European, national, regional and local levels, which are relevant to the plan or programme under assessment and the way those objectives and any environmental considerations have been taken into account during its preparation	Section 3.5
The likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, historic environment, landscape and the interrelationship between the above factors	Chapter 6, 7 and 8
The measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme	Chapter 9
An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information	Chapter 7
A description of the measures envisaged concerning monitoring in accordance with Regulation 17 (Article 10)	Chapter 10
A non-technical summary of the information provided under the above headings	Appendix E – Non-Technical Summary (NTS) [Downloadable as a separate document for enhanced accessibility]

Source: SEA Directive Annex I

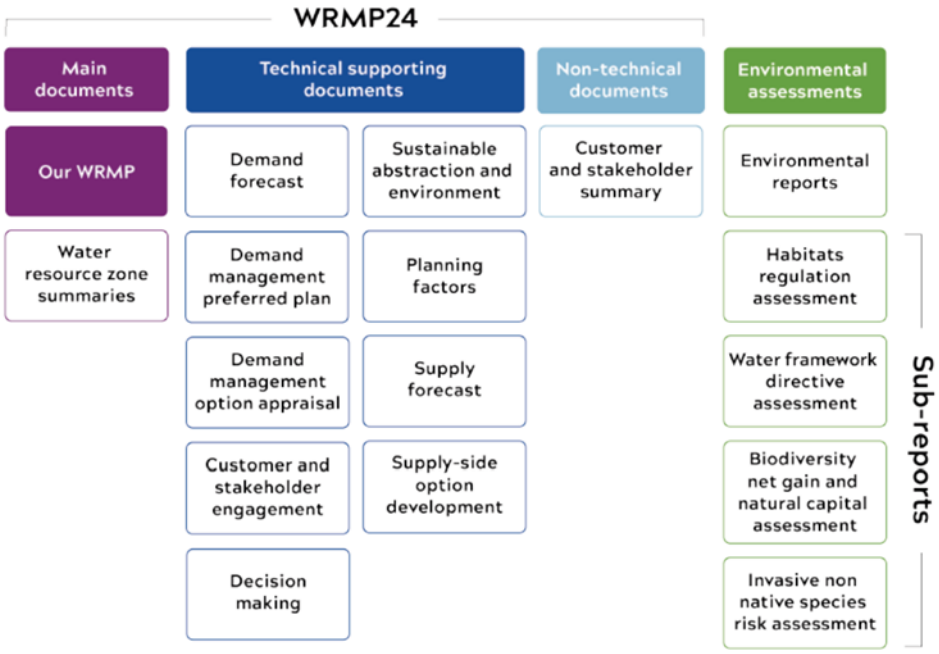
1.5 Environmental Report Structure

1.5.1 The Environmental Report forms part of the documentation that accompanies the rdWRMP24, as shown in Figure 1.3. The report is structured as follows:

- Chapter 1 – Introduction to the WRMP and SEA
- Chapter 2 – Anglian Water's rdWRMP24
- Chapter 3 – Scoping and Consultation
- Chapter 4 – Environmental Assessment Methodology
- Chapter 5 – Influencing the Development of the WRMP
- Chapter 6 – Assessment of the rdWRMP – Best Value Plan (BVP)
- Chapter 7 – Alternative Plans and Wider Considerations
- Chapter 8 – Cumulative Impact Assessment
- Chapter 9 – Mitigation Measures and Enhancement Opportunities
- Chapter 10 – Next Steps and Monitoring Proposals
- Appendix A – SEA Option Assessments, available upon request
- Appendix B – Scoping Report Consultation Log
- Appendix C – Policies, Plans and Programmes Review
- Appendix D – Baseline Review and Baseline Maps
- Appendix E – Non-Technical Summary (NTS)
- Sub-Report A – Habitats Regulation Assessment
- Sub-Report B – Water Framework Directive Assessment
- Sub-Report C – Biodiversity Net Gain and Natural Capital Assessments
- Sub-Report D – Invasive Non-Native Species Risk Assessment

1.5.2 The set of four sub-reports cover the approach and findings from the respective assessments set out in their titles, including their own related appendices. The assessments within the appendices of the sub-reports and Appendix A have been produced at a point in time during the option development process. The assessment results may have changed as a result of additional information being provided or design updates. They have been provided to show the range of options that were explored during this period, any information within the main text of the reports should be taken as the latest information available on the date that these documents were produced.

Figure 1.3: The rdWRMP24 Report and supporting documentation



Source: Anglian Water

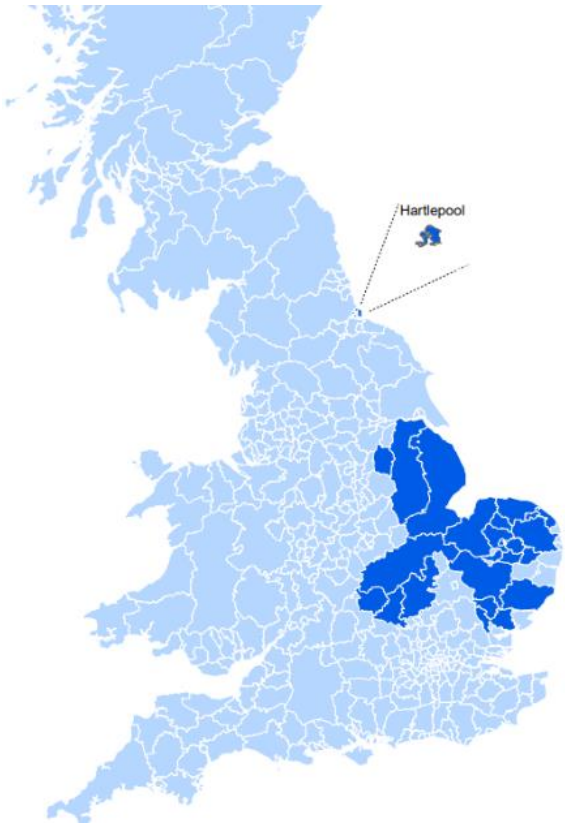
2 Anglian Water's rdWRMP24

2.1 Introduction

2.1.1 Anglian Water is the largest water and wastewater company in England and Wales by geographic area and Anglian Water has a statutory obligation to produce a Water Resources Management Plan (WRMP) every five years. The WRMP sets out how a sustainable and secure supply of clean drinking water will be provided to its customers over a minimum 25 year planning period, whilst showing how its long-term vision for the environment will be achieved. Wider societal benefits, such as tourism, are also considered and balanced against the plan being affordable to create a 'best value' plan.

2.1.2 Figure 2.1 below shows the Anglian Water region.

Figure 2.1: Anglian Water's Region with WRMP24 WRZs



Source: Anglian Water

2.2 Anglian Water's rdWRMP24 challenge

2.2.1 Anglian Water's geographic area is divided into 28 Water Resource Zones (WRZs) including the South Humber Bank which is a non-potable WRZ that sits within Northern Lincolnshire. It should be noted that Hartlepool is not focussed upon in this environmental assessment report as only demand management options (e.g. smart meters, leakage reduction) are required to maintain its supply demand balance through the WRMP24 period. Given rdWRMP24's approach to demand management will apply in Hartlepool; the findings presented in Section 5.3 of this report demonstrate at a strategic level the likely significant effects of the plan as relevant to Anglian Water's Hartlepool supply area.

2.2.4 The East of England is one of the driest regions in the UK, receiving only two thirds of the national average rainfall each year, approximately 600mm, with high evaporation losses[4]. Water supply is under pressure from multiple challenges. The supply and demand forecast upon which the rdWRMP24 is based must account for all these challenges, including population growth, climate change, sustainability reductions (i.e. licence capping and environmental destination) and the need to increase resilience of water supplies to severe drought[5].

2.2.5 The WRPG sets out the requirements for developing the rdWRMP24. Some components of the forecasts of supply and demand are not fixed in the guideline and need to be optimised as part of the best value planning (BVP) process. There are five key policy decisions that the plan-making process must take. The policy decisions are:

1. **Level of demand management** – variations on the roll out and packages of demand management options.

2. **Licence capping** – a sustainability strategy linked to WFD 'no deterioration' requirements that will see WRMP24 deliver reductions to Anglian Water's existing abstraction licences initially capping them to peak levels of previous actual abstraction and ultimately reducing them further to be capped at recent average abstraction levels; this capping occurs before the mid-point of the WRMP24 plan period (2025-2050).

3. **Timing of 1 in 500 year drought resilience** – within the WRMP24 period, the WRPG[6] indicates the plan should enhance the resilience of the water supply system to an extreme drought event from being resilient to a 1 in 200 year drought, to being able to respond to a 1 in 500 year drought, without the need for drought permits or drought orders.

4. **Level of environmental destination** – this is a new aspect brought into this round of plan-making to deliver long-term sustainable and environmental benefits through sustainable abstraction. There are three scenarios for the level of environmental improvements required by 2050 (BAU, BAU+ and Enhance).

5. **Level of environmental ambition** – this is the timing and profile of how the selected level of environmental destination is delivered by 2050; the guidelines challenge water companies to be ambitious in this timing with the aim of delivering public water supply sustainable abstraction cuts considerably before the end of 2050.

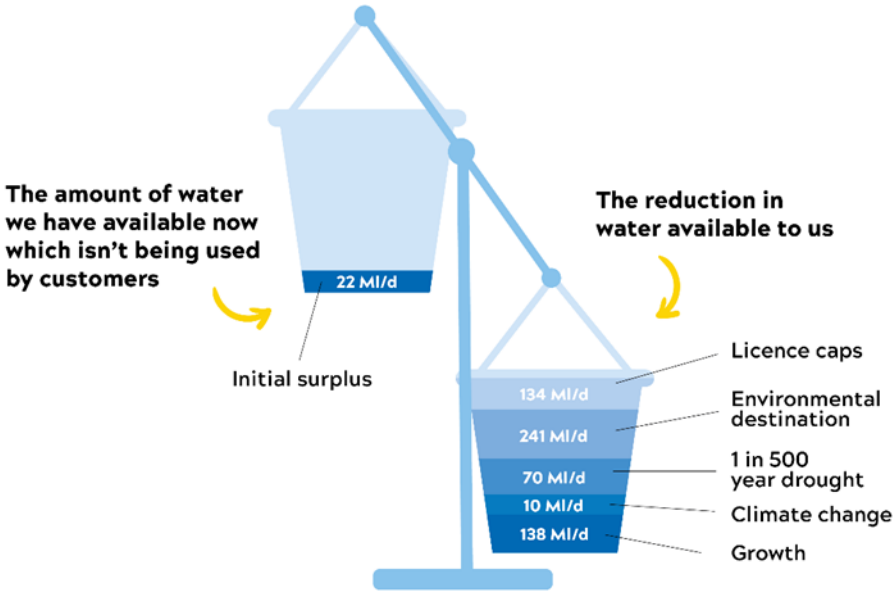
2.2.6 The combined effects of the challenges discussed across this sub-section influence the change in the amount of water available to Anglian Water to deliver secure public water supplies throughout the 2025-2050 WRMP24 plan period. The combination of these challenges (Figure 2.2) indicates that rdWRMP24 must deliver a combination of well over 500Ml/d of new demand management and supply-side infrastructure through the planning period to deliver the statutorily required supply-demand balance in 2050. The environmental assessment's influence on the above policy decisions is presented in Section 5.2 of this report.

[4] Anglian Water Official Website (accessed 04.07.22): https://www.anglianwater.co.uk/about-us/media/fast-facts/#:~:text=We%20operate%20in%20the%20driest,grow%20by%20another%20175%2C000%20homes.

[5] Anglian Water Official Website (accessed 04.07.22): https://www.anglianwater.co.uk/about-us/our-strategies-and-plans/water-resources-management-plan/

[6] Water Resources Planning Guideline (WRPG), April 2023, Section 4.7

Figure 2.2: The impact of expected challenges for Anglian Water's WRMP24



Source: Anglian Water

2.3 Anglian Water's WRMP24 Plan-making

2.3.1 Once the supply demand forecast has determined the scale of challenge to be met, the plan-making process identifies how demand management and new supply-side options can deliver a supply and demand balance for all water resource zones throughout the planning period.

2.3.2 To begin with, demand management options are implemented. Demand management options reduce the amount of water used by customers or lost in the water network. Examples of demand management options include leakage reduction, smart metering and water efficiency.

2.3.3 Following the implementation of demand management options, supply-side options are required to resolve the deficit within the planning period. Due to the numerous challenges Anglian Water face in the coming 25 years, especially in terms of sustainability reductions, they are required to deliver a programme of significant new supply infrastructure. Identifying proposed new supply-side options that pose limited, or no risk, to the environment – as may be the case in other parts of the country that are not water stressed – was not feasible.

2.3.4 These demand management, supply-side options and policy decisions are identified and appraised through a series of technical and environmental stages, see Chapter 5. By the end of these appraisals, a constrained list of options and policy decisions are produced. These are taken forward to the modelling and decision making processes, and explored to determine what is needed to form the BVP. The objectives of the BVP are identified in Figure 2.3.

Figure 2.3: The Best Value Plan Outcomes for Anglian Water's WRMP24

Core Best Value Plan objectives are:

- Flourishing environments
- Investing for tomorrow
- Resilient business
- Positive impact on communities
- Supply meets demand
- Fair charges, fair returns
- A smaller footprint

Source: Anglian Water

2.3.5 Anglian Water has adopted a planning approach that uses least-cost optimisation as well as broader criteria to develop a BVP which takes account of 'best value' decision making criteria:

- Cost to build and operate the plan
- Adaptability and flexibility of the plan to cope with uncertain future needs
- Alignment to the Water Resource East's regional strategy and emerging Regional Plan
- Resilience of the plan to severe and extreme drought and other hazards, and the residual risks
- Deliverability of the plan with timescales needed to manage risks
- Alignment to customer preferences
- Environmental and social impacts of the plan, including the findings from the environmental assessment process

Option Types

2.3.6 The rdWRMP24 includes demand management options, Water Industry National Environment Programme (WINEP) options and supply-side options. The broad option types considered include:

Demand Management Options

2.3.7 Demand management is considered at two key areas: policy decisions around scale of demand management and demand management option development within a portfolio; details of their assessment are provided in Section 5.3 of this report. Detailed explanations of this area of plan-making can be found in the rdWRMP24's two technical supporting documents on demand management (Figure 1.3).

2.3.8 The policy decision between demand management portfolios cover: Anglian Water's current level of demand management (the baseline portfolio) and four WRMP24 responses to this,

which are termed: Extended Low; Extended Plus; Aspirational, and 50% Leakage. Each portfolio includes various demand management options within it, which include interventions such as:

- **Smart Metering** – involves reducing water consumption by installing meters in currently unmeasured properties. It can include compulsory metering for household and non-household uses, smart metering, and other metering such as optant metering.
- **Other consumption reduction –** involves reducing household and non-household consumption in ways other than metering. This includes activities such as personalised garden advice via a virtual assistant, community education and rewards, leaky loos campaign and plumbing loss uplift.
- **Tariffs/fees** – involves changes to existing measured tariffs, introduction of special tariffs for specific users, and introduction of special fees (this intervention is currently on trial).
- **Water reuse** – rainwater harvesting/grey water reuse for new or existing household and non-household.
- **Water efficiency measures** – water use audit and inspection, awareness campaigns, sponsoring water efficiency enabling activities by others, home visits to reduce plumbing losses, and the promotion of water saving devices.
- **Loss reduction** – involves reducing distribution system leakage, including service reservoir losses and trunk main leakage, as well as reducing customer supply pipe leakage. Leakage reduction options include capital investments to both the company-side and customer-side assets and operational improvements and policy changes. Examples include pressure management, mains renewal, increasing efficiency of active leakage control, etc. Customer supply pipe leakage reduction typically includes increased customer engagement/education or incentives to repair their supply pipes between the distribution main and the property.

WINEP options

2.3.9 The WINEP options are a list of environmental improvement schemes that ensure that water companies meet European and national targets related to water. The WINEP is an ongoing process that all water companies are involved with outside of the WRMP. The WINEP process involves investigations into specific abstractions and their consequences for the environment due to effects on surface or groundwater. Each WINEP investigation seeks to identify opportunities to improve the affected environment and has its own processes and approach that sit outside the WRMP plan-making process and the scope of this SEA. However, details of the WINEP options that will be taken forward and implemented by Anglian Water between 2025 and 2030 are included, reported and costed for within each five year WRMP. As such, the options selected for delivery by the WINEP process, are included as ‘WINEP options’ and form a component of the rdWRMP24, these specific options have been assessed within the SEA. The WINEP options included in the WRMP fall into five broad categories: river restoration schemes; river support schemes; pond support scheme; recirculation scheme; and source relocation.

Supply-side option types

- **Aquifer storage and recovery** – aquifer storage options involve abstracting water from a river or reservoir, treating and injecting it underground to be stored in natural aquifers. This water is then re-abstracted and treated when required for supply.
- **Backwash recovery** – Backwash recovery is a means of maximising the resource we already have available by recycling water from existing treatment processes that would normally be discharged to the environment. This can be achieved by settling water from filter backwash processes and decanting the clean, settled water to the front-end of the treatment process.

- **Conjunctive use** – involves the co-ordinated use of surface water and groundwater and allows flexibility depending on the conditions e.g. surface water can be used in wet periods, and groundwater can be used in dry periods.
- **Desalination** – desalination options involve pumping sea water or brackish water (from an estuary) for treatment and release into supply. The water will be blended before putting into supply, with the brine to be piped out to sea for disposal or to a sewer.
- **Groundwater treatment** – conventional treatment of groundwater to drinking water standards.
- **Reservoirs** – reservoir options include the creation of new reservoirs. It is likely that most of these will be bunded reservoirs (i.e. not within a valley) with piped transfers in and out of supply. This option type includes the two Strategic Resource Options[7] (SRO) in Anglian Water's plan area (see below 2.3.1.1).
- **Tankering** – sea tankering options bringing in water from abroad were considered. This would have encompassed storage and offloading facilities in the UK with water piped or tankered to water treatment works (WTWs) or reservoirs.
- **Trading** – involves an agreement with another water company or third party to trade water where there is a surplus.
- **Transfers** – transfers usually involve water being piped from one WRZ to another, or from one water company to another. However, they can also be a component of another option type such as a desalination plant, or a component of conjunctive use. They will transfer water from the new asset to a suitable delivery point.
- **Water reuse** – effluent is treated and discharged into rivers for re-abstraction downstream into potable WTW or piped into supply.
- **Water treatment works** – treatment and recycling of wastewater.

2.3.10 It is also important to recognise the strategic plan level of the rdWRMP24 and that, following adoption of the rdWRMP24, individual supply-side options will be progressed at a project-level. This will require detailed design, engagement with key stakeholders, detailed environmental assessments, compliance with environmental laws and policies and gaining any required consents/licences before they could be built and operated.

Strategic Resource Option schemes

2.3.11 Two reservoir schemes – the Lincolnshire Reservoir and the Fens Reservoir have been identified as key supply-side options. These are raw water storage reservoirs which take surplus water when it is available from the environment, likely to be in winter, and store it until needed by customers. These schemes featured prominently in Anglian Water's WRMP19, recognising the need to plan long-term for our region's future water needs. The two reservoirs formed part of Anglian Water's Draft WRMP24, in line with the relationship between Regional Plans and WRMP set out in the Environment Agency's *National Framework: Meeting our future water needs: a national framework for water resources* (March, 2020)[8].

2.3.12 Both schemes are being progressed through the fast-tracked delivery framework overseen by the Regulatory Alliance for Progressing Infrastructure Development (RAPID). Schemes of regional importance are known as SRO schemes. Both schemes have previously progressed through the RAPID Gate process (Gates 1 and 2) where regulators review emerging plans for designing and developing SROs with focus on ensuring that funding for continued investigation

[7] *The SROs referenced are referring to the two reservoirs being progressed.*

[8] Environment Agency (2020). Meeting our future water needs: a national framework for water resources. Available at: Meeting our future water needs: a national framework for water resources - GOV.UK (www.gov.uk)

and development of solutions is aligned to water resources planning. RAPID Gate process 3 is ongoing.

2.3.13 Further detail can be referred to within WRE's Regional Plan[9] and the RAPID Gate 2 submissions for Fens and Lincolnshire Reservoirs[10].

Alternative Plans

2.3.14 The development of a WRMP is a complex process involving the generation and assimilation of many different types of information and data, and the application of modelling and decision making. For Anglian Water's WRMP24 plan-making process this focussed on providing best value. This included the development of the best value framework, which has been used as the basis for decision making within the WRMP24. The best value plan considers factors alongside costs, achieving the outcomes that provide benefits to customers, the wider environment and society as a whole. The process moved on to technical aspects including water resource zone integrity assessments, problem characterisation and determining both modelling and decision making approaches, including how environment and society are factored into these approaches. The formation of alternative plans begins by structuring the multiple inputs to supply demand forecasting to determine scale of the supply demand balance problem. Once this is determined an initial most likely scenario is generated. From this initial most likely scenario modelling is used to develop the alternative plans. This process is discussed further in the rdWRMP24 with full details presented across a number of Chapters within rdWRMP24's Decision Making Report technical supporting document.

2.3.15 To select the Best Value Plan (BVP) the best value planning framework was used to assess four alternative plans.

- Plan A: Initial least cost plan based on the initial most likely scenario.
- Plan B: Alternative plan based on preferred most likely scenario.
- Plan C: Least cost plan based on preferred most likely scenario.
- Plan D: Least cost plan based on best for environment (abstraction) scenario.

The Best Value Plan

2.3.16 Based on the evidence of the best value planning assessment, see Chapter 5, and the details in the rdWRMP24 Decision Making Report technical supporting document, Plan B is considered to offer best value for customers and stakeholders whilst providing benefits to society and protection to the environment:

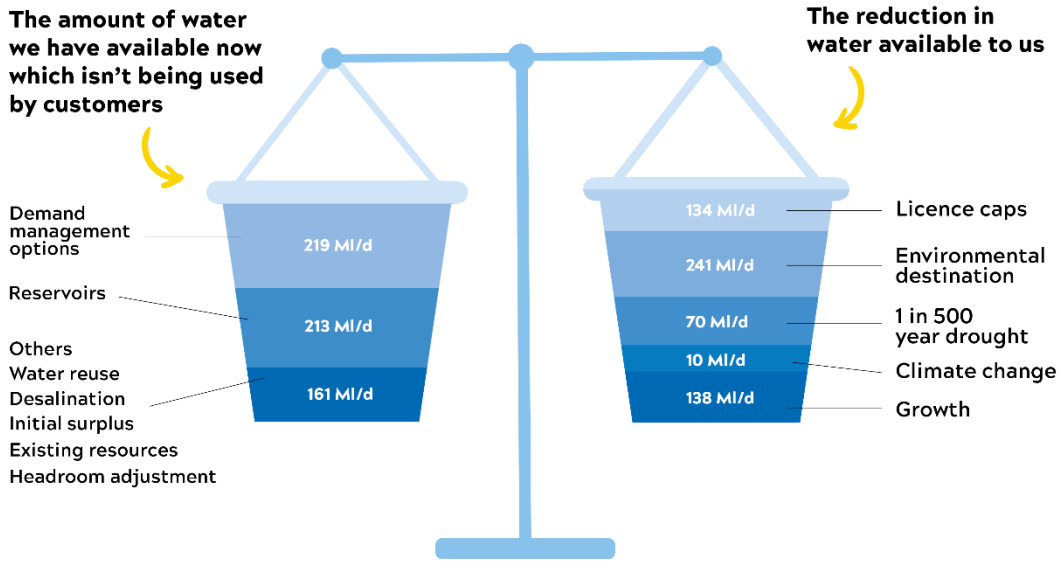
- It delivers a secure and wholesome supply of water to customers.
- It optimises available resource.
- It delivers a secure and wholesome supply of water to other sectors.
- It is affordable and sustainable over the long term.
- It delivers long-term environmental improvement.
- It increases the resilience of the water system.
- It supports the views of regional stakeholders and water companies' customers and it is not detrimental to social wellbeing.

[9] Water Resources East (2023). The Regional Water Resources Plan. Available at: Water Resources East.

[10] Ofwat (2023). RAPID: Regulators' Alliance for Progressing Infrastructure Development (RAPID). Available at: Ofwat.

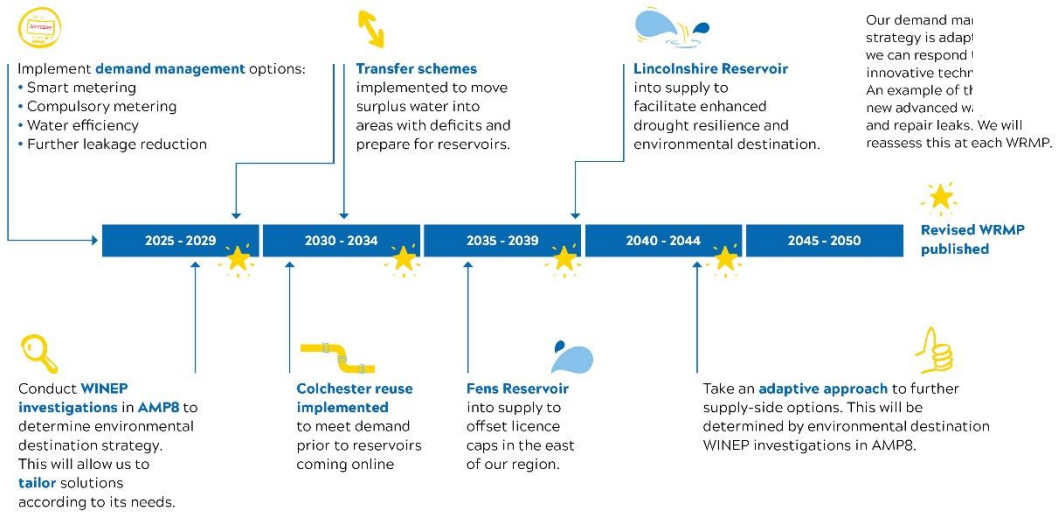
- It is a plan which can adapt to future scenarios. The outcome of Plan B – in terms of being able to maintain a supply demand balance – is illustrated in Figure 2.4. A summary of the timeline for implementing WRMP24 is shown in Figure 2.5.

Figure 2.4: The outcome of Plan B (WRMP 24 – Best Value Plan)



Source: Anglian Water

Figure 2.5: A summary timeline of Anglian Water's WRMP24



Source: Anglian Water

2.3.1 The methodology for assessing the components of the WRMP, the BVP and alternative plans and cumulative effects is set out in Chapter 4. Information on how the environmental and social considerations influenced the development of the BVP is set out in Chapter 5. The findings from

the SEA of the BVP (Plan B) as a whole are set out in Chapter 6. The findings from the SEA of the alternative plans (Plans A, C and D) are set out in Chapter 7.

2.4 Regional Planning Context for WRMP24

2.4.1 The development of rdWRMP24 differs from previous planning rounds (e.g. WRMP19), as it is prepared within the context of regional planning – as set out in the Environment Agency's National Framework. Regional planning groups aim to develop Regional Plans that ascertain the future water resource needs of their region (both public and non-public water supply) and establish how these needs will be met.

2.4.2 Although the Regional Plans and water company WRMPs are separate plans, there are significant overlaps between them, including many of the options required to maintain the supply demand balance for public water supplies. Anglian Water are a member of two regional planning groups, Water Resources East (WRE) (supply area in the East of England) and Water Resources North (WReN) (Hartlepool). The WRMP24 is expected to align with the Regional Plans.

2.4.3 The regional planning process provides a lead on determining the long-term reductions in abstraction required to protect and enhance the environment (environmental ambition and destination) which influences the need to develop new infrastructure to manage the supply demand balance across Anglian Water's supply areas. Additionally, the plans overlap in relation to the consideration of new public water supply-side options (new sources of water and transfer pipelines) where these are considered regionally important.

2.4.4 By producing regional best value plans, the five planning groups (WRE, WReN, Water Resources South East (WRSE), Water Resources West, and West Country Water Resources) have been able to work together to meet the national need for water by exploring inter-regional transfers and the sharing of resource. It should be noted that the Regional Plans are currently being drafted and their plan-making process runs alongside that of the development of the WRMP24.

2.4.5 The Regional Plans are required to undertake the same suite of environmental assessments as water company WRMPs. Due to this Anglian Water's SEA and wider suite of environmental assessments has considered the approach taken by WRE, however Anglian Water's SEA has been undertaken at a spatial resolution considered appropriate for the WRMP.

2.5 Changes between the Draft WRMP24 and this Revised Draft WRMP24

2.5.1 This report has been updated to reflect the predicted effects related to the rdWRMP24. A previous version of this report was included in the consultation documents that were made available to regulators, statutory consultees, stakeholders and the public between December 2022 and March 2023. The comments and responses received through the consultation process on the dWRMP24 raised a number of areas where the plan-making process needed to consider changes to its approach. Detailed coverage of this is presented in Anglian Water's formal *Statement of Response* document, with two of the key changes and the related responses noted below:

- Seek to be more ambitious with the plan's approach to Demand Management

  rdWRMP24 response: The revised draft has moved from including the Extended Plus portfolio of demand management options to include the Aspirational portfolio. This change further enhances Anglian Water's commitment to demand management as a core aspect of the plan, this portfolio delivers savings across the 25 year plan period, totally over a 221.8 Ml/d contribution to the supply demand balance by the end of the plan period (2050).

- Seek to support the development of wider Government and industry ambitions for a Net Zero industry hub in the Humber

  rdWRMP24 response: The revised draft has moved to include a new supply-side option (SHB9 – 60 Ml/d desalination Mablethorpe non-potable) which is designed to provide sufficient non-potable water supplies to meet predicted demands for this potential new sectoral need. This new option has therefore been assessed within this report.

2.5.2 See Chapter 3, Sections 3.2.9 to 3.2.13, for more information on how comments and responses relate to the SEA.

3 Scoping and Consultation

3.1 Introduction

3.1.1 This Chapter outlines the SEA activities that set the context for the assessment of the rdWRMP24. The methodology for the assessment is set out in Chapter 4. The SEA Scoping Report and the Environmental Report (that accompanied the draft WRMP24) have been consulted on and valuable feedback has been provided to inform this updated Environmental Report. Following a summary of these consultations, this Section goes on to provide an overview of three of the foundations of the SEA:

- the relationship of the WRMP24 with other plans, programmes and policies
- the environmental and social baseline
- identification of environmental protection objectives and opportunities

3.2 SEA Consultation

3.2.1 Consultation is an important part of the SEA process. Feedback from statutory consultees and other stakeholders provides information to help inform the existing context, future trends, assessment methods, findings and mitigation. As part of the SEA process, the SEA Scoping Report and the Environmental Report of the draft WRMP have been subject to consultation.

Consultation on the SEA Scoping Report (March – April 2021)

3.2.2 The scoping stage of the SEA process (Stage A in Figure 1.2) informs the context and scope for the SEA and Environmental Report. During scoping, key plans and programmes are reviewed, baseline conditions and key issues and opportunities are identified, and the SEA Framework is developed. The scoping stage for the WRMP was undertaken and a SEA Scoping Report produced in early 2021[11], the SEA Scoping Report was issued for a formal five-week consultation (March to April 2021) to the statutory consultees: Natural England, Environment Agency, and Historic England. This Section summarises the outcomes from the scoping stage.

3.2.3 The approach proposed in the SEA Scoping Report recognised the context within which the WRMP24's environmental assessment was required to be developed. A need was identified to build on the environmental setting defined in the assessment of Anglian Water's WRMP19 and to do this within the new context of regional planning, specifically within the scope of WRE environmental assessments. WRE completed a consultation on its Integrated Environmental Assessment (IEA) approach, with the same statutory consultees, two months before consultation on the WRMP SEA Scoping Report. This SEA, and the wider suite of assessments, established an approach to enable effective alignment with the IEA applied by WRE's regional planning group.

3.2.4 The Scoping Report defined the Anglian Water operational area as the core study area for the SEA. The SEA also identifies effects outside of the core study area where these may occur as a result of the effects originating within the study area, or where they may occur when the effects of the WRMP combine with effects from plans or projects in neighbouring water company areas. The horizon for the SEA is the same as that for WRMP24, i.e. to 2050. Where particular elements of the WRMP are time-related and relevant to the assessment, this will be identified. Where individual effects are likely to persist over a long period or benefits are not likely to

[11] Anglian Water (2021). Water Resource Management Plan 2024 Strategic Environmental Assessment Scoping Consultation.

accrue for a long period following the intervention, these short, medium and long-term effects are noted in the description of the effect on a particular SEA objective.

3.2.5 Following the Scoping Report consultation period, all consultation responses were reviewed and considered. A total of 105 comments were received from the Statutory Bodies, encompassing agreement with aspects of the proposed approach, sources to assist in its application, methodological questions and clarifications, and suggested modifications and enhancements to the proposed approach and assessment framework.

3.2.6 Key themes arising from the Scoping Report consultation included:

- **Consistency between approaches**, aligning with, and where necessary building on/ refining, previous work and regional-level plans (including WRE's IEA approach), as well as relevant guidance, planning and policy frameworks
- **Coverage of a full range of socio-environmental issues including interactions and synergistic impacts** in both construction and operation, including but not limited to air quality, climate change, pollution, biodiversity, and aesthetic/character values
- **Mitigating potential impacts on the historic environment and heritage assets**, including designated and non-designated heritage sites, and recognising that some heritage assets may currently be unknown[12]
- **Representativeness** across locations, customers, and stakeholders, and engagement of experts including local groups and advisors
- **Opportunities to have positive impacts**, including in relation to biodiversity, responsible recreation and engagement with the natural and historic environments, climate resilience, and development of green infrastructure.

3.2.7 The responses received and how these have been addressed are presented within Appendix B.

3.2.8 The SEA assessment framework was previously presented in this Chapter of the original Environmental Report, demonstrating the outcome of the scoping consultation. In this updated version of the report it has been relocated to sit within Chapter 4: Environmental Assessment Methodology to aid reader understanding of its role as a core element of the SEA process.

Consultation on the Draft WRMP Environment Report (December 2022 – March 2023)

3.2.9 The draft WRMP Environmental Report was produced to accompany the draft WRMP (Stage C in Figure 1.2). The Environmental Report set out the context of the draft WRMP, assessment methodology, findings of the assessments of draft WRMP24, cumulative effects, mitigation and monitoring. The draft plan and Environmental Report were made available for public consultation via Anglian Water's website and promoted via various media, including a consultation webinar, social media and direct engagement, including distribution to:

- Regulators: Ofwat and Environment Agency
- SEA Statutory consultees: Environment Agency (as above), Natural England, Historic England

[12] Within the SEA assessment heritage assets (designated and non-designated) will be considered. Where appropriate, comments are provided on these within the SEA objective narrative. It is not feasible to list all thousands of Historic Environment Records (HER) entries, but we include text recognising there are likely to be non-designated heritage sites related to supply-side options included on Anglian Water's constrained list. To consistently incorporate non-designated heritage assets across the Anglian Water's WRMP24 area for inclusion in the SEA report the data would need to be obtained from HER data centres, this activity is not considered proportionate at this strategic planning scale and is more commonly undertaken in the early stages of project pre-application as part of the EIA stage due to cost and complexity.

3.2.10 At the end of the consultation period (in March 2023) approximately 130 comments, from a number of respondees, had been received in relation to the environmental assessments.

3.2.11 Key themes arising from the draft WRMP24 consultation and comments related to the Environmental Report included:

- **Additional information on the WRMP**, communicating more information about the content and objectives of the WRMP and more information on the amount of water that is required/ available (addressed in Chapter 2, above).
- **More information on how environmental and social considerations have influenced the development of the WRMP,** including key policy decisions, options selection, developing the best value plan and alternatives (addressed in Chapter 5).
- **Clarify how mitigation has been considered** in the assessments and the mechanisms through which these maybe secured as individual schemes progress (addressed in Chapter 4's methods and within the findings in Chapter 6 and 7).
- **Opportunity to provide more information on cross-boundary issues,** including interactions with neighbouring water company plans, SROs and identify any cross-boundary conflicts (addressed in Chapter 8, on cumulative effects).
- **Provide greater emphasis on the effects of the 'plan as a whole'**, including the approach to assessing alternative plans (addressed in the assessment findings Chapters for the best value plan (Plan B) – Chapter 6 – and alternative plans (Plans A, C and D) – Chapter 7).

3.2.12 These themes and other responses (e.g. requests related to specific options such as the SROs and specific topics such as the historic environment) have been addressed as far as possible in this updated Environmental Report. However, as the proposals in the rdWRMP – particularly the supply-side options – remain at plan level, the detail of the exact location of future infrastructure is not yet known and is therefore a limitation to the assessment. The development of large schemes, such as the reservoir SRO schemes, is progressing in parallel to the development of the rdWRMP and have not been finalised.

3.2.13 Anglian Water has produced a formal 'Statement of Response', which is required as part of the rdWRMP24 plan-making process. Coverage of how comments are taken into account in relation to SEA findings, other environmental assessments, and the environmental effects of the rdWRMP24 are all presented within the 'Statement of Response' document.

3.3 Relationship with other Policies, Plans and Programmes

3.3.1 The National Framework for Water Resources sets out that Anglian Water's rdWRMP24 must be prepared within the context of the regional planning process (see Section 2.4). Although the Regional Plans and water company WRMPs are different plans produced by separate entities, there are large overlaps between the two types of plans, including many of the plan options required to determine and maintain the future supply demand balance for public water supply.

3.3.2 Anglian Water is a member of two regional planning groups, WRE and WReN. The timeline for developing Regional Plans runs in parallel to the WRMP24 timeline, but alignment has been ensured by having regular collaborative working party discussions. As a result, some aspects of the rdWRMP24 were shaped by this regional level plan-making, such as large supply-side options and long-term reductions in abstraction required to protect and enhance the environment (known as environmental destination – see Section 2.2 above).

3.3.3 A review of the policies, plans, and programmes (including legislation) (PPPs) relevant to the WRMP was undertaken as part of the SEA scoping process and updated in June 2023 for this rdWRMP24. The aim of the PPP review was to ensure both plan-makers and consultees developed a good understanding of the relationship between the rdWRMP24 and other relevant plans and programmes. This helps to satisfy the expectations in Schedule 2(3)(4) and (5) in

relation to environmental characteristics of the area, existing environmental problems which are relevant to the plan, and environmental protection objectives. Table 3.1 lists the most relevant policies, plans, and programmes to the WRMP, Appendix C presents the PPP review.

3.3.4 During the SEA process, a number of new PPPs have emerged, including key English legislation and new River Basin Management Plans (RBMPs) published. Of most note, the Environment Act 2021 has come into effect and associated secondary legislation has been prepared. Legally binding environmental targets are a key commitment in the Environment Act 2021. These environment targets were published (16 December 2022) and have been considered in the review of PPPs and included as environmental protection objectives influencing the SEA process (see Section 3.5). In addition, although the UK left the EU on 31 January 2020, EU law of that date or prior is retained in domestic UK law, including the need for SEAs, WFD assessments and HRAs.

3.3.5 The main themes, messages and objectives from the policies, plans and programmes review that are considered relevant to the rdWRMP24 are as follows:

- Conserve flora and fauna and their habitats
- Conservation and wise use of wetlands and their resources
- Protection of wild birds and their habitats
- Halt overall biodiversity loss
- Creation of green infrastructure[13]
- Protection of landscape character and quality
- No deterioration of water bodies as set out in the Water Framework Directive
- Prevent or limit inputs of pollutants into groundwater
- Monitor and provide information to consumers on drinking water quality
- Promote efficient use of water
- Reduce and manage the risks of flooding
- Reduce greenhouse gas emissions
- Adapt to the impacts of climate change
- Increase resource efficiency and reduce natural resource use and waste
- Create a green economy and promote sustainable growth
- Promote sustainable and healthy communities[14]
- Promote social inclusion and community participation
- Carbon sequestration with the aim of net zero carbon emissions by 2050 as per Paris Climate Agreement (and legislation passed by UK govt. in 2018)

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

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

- Water Companies Public Interest Commitment (Water UK, 2019[15])
- Habitat creation and safeguarding ecosystem services (Woodland Carbon Guarantee scheme in line with the Woodland Carbon Fund)
- Catchment management/nature-based solutions working to enhance natural processes (existing work through a Catchment Based Approach (CaBA))
- Reduce water waste and leakage (Ofwat targets and penalties)
- Improve resilience to extreme droughts ensuring consistency with WRMP24 (1 in 500 year resilience)
- Protect cultural heritage assets including archaeology and built heritage
- Protect best quality soils and agricultural land
- Support the Lawton recommendation[16] for statutory undertakers planning the management of water resources to:
  - Make space for water and wildlife along rivers and around wetlands
  - Restore natural processes in river catchments, including in ways that support climate change adaptation and mitigation
  - Accelerate the programme to reduce nutrient overload, particularly from diffuse pollution
- Support the UK Government's Environmental Improvement Plan[17]:
  - Using resources from nature sustainably – including embedding an "environmental net gain" principle into development
  - Enhancing beauty, heritage and engagement with the natural environment
  - Reduced risk of harm from environmental hazards
  - Maximise our resources, minimise our waste
  - Clean and plentiful water
  - Thriving plants and wildlife
  - Clean air
  - Managing exposure to chemicals and pesticides
  - Mitigating and adapting to climate change
  - Enhancing biosecurity

The themes, messages and objectives identified from the policies, plans, and programmes review have been used to identify key issues and opportunities and develop the SEA Framework.

[15] Water UK (2019). Public Interest Commitment. Available at: Public-Interest-Commitment.pdf (water.org.uk)

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

[17] UK Government (2023). Environmental Improvement Plan 2023. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1168372/environmental-improvement-plan-2023.pdf

Table 3.1: Relevant Policies, Plans, Programmes and Environmental Protection Legislation

International	
Berne Convention on the Conservation of European Wildlife and Natural Habitats (1979) Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979) Cancun Agreements (2010) Charter for the Protection and Management of the Archaeological Heritage (1990) Children's Environment and Health Action Plan for Europe (2004) Commitments arising from the World Summit on Sustainable Development (WSSD), Johannesburg (2002) Convention Concerning the Protection of the World Cultural and Natural Heritage (1972) Convention for the Protection of the Architectural Heritage of Europe (2009) Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention) (1998)	Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITIES, 1973) Convention on the Protection of Underwater Cultural Heritage (2001) Framework Convention on Climate Change (1992) Kyoto Protocol on Climate Change (1997) Paris Agreement (2015) Doha Agreement (2012) Ramsar Convention on Wetlands of International Importance especially as Wildfowl Habitat (1971) World Health Organisation (WHO) Global Air Quality Guidelines (2021) World Heritage Convention (1972)
European[18]	
2030 Policy Framework for Climate and Energy (2014) A Clean Planet for all: A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy (2018) A Roadmap for Moving to a Competitive Low Carbon Economy in 2050 (2013) Air Quality Directive (2008/50/EC) (2008) Air Quality Framework Fourth Daughter Directive (2004/107/EC) (2004) Ambient Air Quality and Cleaner Air for Europe Directive (2008/50/EC) (2008) Assessment and Management of Environmental Noise Directive (the 'Noise Directive')(2002/49/EC) (2002) Bathing Water Directive (76/160/EEC); and Directive 2006/7/EC repealing Directive 76/160/EEC (2006) Biodiversity Strategy to 2020: Our life insurance, our natural capital (2011) Blueprint to Safeguard Europe's Water Resources (2012) Directive 2007/60/EC on the Assessment and Management of Flood Risks (the 'Floods Directive') (2007/60/EC) (2007)	European Landscape Convention (2004) Freshwater Fish Directive (2006/44/EC) (2006) Groundwater Directive (2006/118/EC) (2006) Groundwater Directive 2014/80/EU (On the protection of groundwater against pollution and deterioration") (2014) Industrial Emissions Directive (integrated pollution prevention and control) 2010/75/EU (2010) Landfill Directive (1999/31/EC) (1999) Limiting Global Climate Change to 2 Degrees Celsius: The Way Ahead for 2020 and Beyond (2007) Mining Waste Directive (2006/21/EC) (2006) National Emissions Ceiling Directive 2001/81/EC (2001) Nitrates Directive (91/676/EC) (2004) Regulation 1143/2014 on Invasive Alien Species (2014)

Directive concerning Urban Waste Water Treatment Directive (the 'Urban Waste Water Treatment Directive') (91/271/EEC) (1991) (amended 1998)

Directive on the assessment of the effects of certain plans and programmes on the environment (the Strategic Environmental Assessment or 'SEA Directive') (2001/42/EC) (2001)

Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna (the 'Habitats Directive') (92/43/EEC) (1992)

Directive on the Conservation of Wild Birds (the 'Birds Directive') (79/409/EEC and amending Directive 2009/147/EC) (1979 / 2009)

Directive on the Promotion of the use of energy and renewable sources (the Renewable Energy Directive') (2009/8/EC) (2009)

Eel Directive 2007/1100/EC (2007)

Energy 2020 – A Strategy for Competitive, Sustainable, and Secure Energy (2000)

Energy Efficiency Directive (2012/27/EU) (2012)

Environmental Liability Directive (2004/35/EC) (2004)

Environmental Quality Standards Directive 2008/105/EC (2008)

EU Drinking Water Directive (98/83/EC) (1998)

Europe 2020 A Strategy for Smart, Sustainable and Inclusive Growth (2015)

European Convention on the Protection of Archaeological Heritage (Valletta Convention) (1992)

Regulation 1100/2007 establishing measures for the recovery of the stock of European eel (2007)

Renewable Energy Directive 2009/8/EC (2009)

Revised European Charter for the Protection and Sustainable Management of Soil (2003)

Seventh Environmental Action Programme to 2020 'Living well, within the limits of our planet' (2013)

Strategy on Adaptation to Climate Change (2013)

Sustainable Development Strategy (2006)

Thematic Strategy for Soil Protection (2006)

Thematic Strategy on Air Pollution (2005)

Towards Social Investment for Growth and Cohesion 2014-2020 (2013)

Urban Wastewater Treatment Directive (91/271/EEC) (1991)

Waste Framework Directive 2008/98/EC (2008)

Water Framework Directive (2000/60/EC) (2000)

National – Government (UK or England)

Air Pollution: Action in a Changing Climate Defra (2010)

Air Quality Standards Regulations (2010)

Air Quality Strategy (2023)

Air Quality Plan for Nitrogen Dioxide (NO2) in UK (2017)

Ancient Monuments and Archaeological Areas Act (1979)

Ancient Woodland and Veteran Trees: Protecting them from development, Forestry Commission and Natural England (2014) (Updated 2017)

Ancient woodland, ancient trees and veteran trees: advice for making planning decisions (2022)

Build Back Better: our plan for growth (2021)

Clean Air Strategy (2019)

Climate Change Act (2008) (2050 Target Amendment) Order (2019)

Climate change approaches in water resources planning – Overview of new methods (2013)

Conservation 21 - Natural England's Conservation Strategy for the 21st Century, Natural England (2016)

Conservation of Habitats & Species Regulations (2017)

Conservation of Habitats and Species (Amendment) (EU Exit) Regulations (2019)

Natural Environment White Paper – Natural Choice: Securing the Value of Nature, Defra (2012)

Net Zero Strategy: Build Back Greener (2021)

Nitrate Pollution Prevention Regulations (2015)

Norfolk and Suffolk Broads Act 1988

Our Waste, Our Resources – A Strategy for England, HM Government (2018)

Ozone-Depleting Substances Regulations (2015)

Peatlands and the Historic Environment, An Introduction to their Cultural and Heritage Value (2021)

Planning (Listed Building and Conservation Areas) Act (1990)

Planning our electric future: A White Paper for secure, affordable and low carbon electricity (2011)

Preparing for a drier future: England's water infrastructure needs, National Infrastructure Commission (2018)

Protect groundwater and prevent groundwater pollution, Environment Agency (2017)

Protection of Wrecks Act (1973)

Conservation of Habitats and Species Regulations (2010) 'the Habitats Regulations' (amended 2011)

Countryside and Rights of Way (CROW) Act (2000)

Creating a better place: Our ambition to 2020 (2016)

Culture White Paper (2016)

Delivering a healthy natural environment – An update to Securing a healthy natural environment: An action plan for embedding an ecosystems approach (2010)

Development Strategy (2005)

Drought Response: Our Framework for England (2017)

Eels (England and Wales) Regulations (2009)

Energy Act (2013)

Energy White Paper: Meeting the Energy Challenge (2007)

Environment Act (2021)

Environment Act (1995)

Environment Protection Act (1990)

Environmental Assessment of Plans and Programmes Regulations (2004)

Environmental Damage (Prevention and Remediation) (England) Regulations (2015)

Environmental Improvement Plan (2023)

Environmental Permitting (England and Wales) Regulations (2016)

Environmental Principles Policy Paper (2023)

Fixing the foundations: Creating a more prosperous nation (2015)

Flood and Water Management Act (2010)

Flood Risk Assessments: Climate Change Guidance – Flood risk assessments: climate change allowances (2016)

Flood Risk Regulations (2009)

Future Water: The Government's Water Strategy for England (2008)

Government Food Strategy (2022)

Government Statement on the Historic Environment (2015)

Great Britain Invasive Non-native Species Strategy (2015)

Green Future: Our 25 Year Plan to Improve the Environment, UK Government (2018)

Groundwater (Water Framework Directive) (England) Direction (2016)

Heritage Protection for the 21st Century (2007)

Infrastructure Act (2015)

Invasive Alien Species (Enforcement and Permitting) Order (2019)

Lakes and Water Features, Technical Guidance (2023)

Restoring Sustainable Abstraction Programme (undated)

Rural Strategy (2004)

Safeguarding our Soils – A strategy for England, Defra (2009)

Salmon and Freshwater Fisheries Act (1975)

Scheduled Monuments & Nationally Important but Non-Scheduled Monuments (2013)

Securing a healthy natural environment: An action plan for embedding an ecosystems approach (2007)

Securing the future – Delivering UK Sustainable Development Strategy (2005)

Setting of Heritage Assets (Historic Environment Good Practice Advice in Planning 3), Second Edition (2017)

Shoreline Management Plan Guidance (2006)

Site Improvement Plans for England's Natura (IPENS) 2000 sites: East of England (2012)

Soil Action Plan for England (2004)

Standing Advice on Protected Species, Natural England (2022)

State of Natural Capital Annual Report 2020. Natural Capital Committee (2020)

Sustainability Appraisal and Strategic Environmental Assessment, Sustainability Appraisal and the Historic Environment, Historic England Advice Note 8, (2016)

Sustainable Farming and Food Strategy – Facing the future (2002)

The Historic Environment and Site Allocations in Local Plans, Historic England Advice Note 3, Historic England (2015)

The Levelling Up and Regeneration Bill (2022)

Third UK Climate Risk Independent Assessment (CCRA3) (2021)

UK Biodiversity Action Plan (1994)

UK Climate Projections (UKCP) 18, (2018)

UK Renewable Energy Roadmap (2011)

UK Flood risk and coastal erosion management: Policy Statement (2020)

UK Geodiversity Action Plan (UKGAP) (2011)

UK National Ecosystem Assessment Follow-on Reports (2014)

UK Net Zero Growth Plan (2023)

UK Peat Strategy (2018-2020) (2018)

UK Post-2010 Biodiversity Framework (2012)

UK Powering Up Britain – Energy Security Plan (2023)

UK Renewable Energy Strategy (2009)

UK Sustainable Development Strategy (2005)

Understanding the Risks, Empowering Communities, Building Resilience: The National Flood and Coastal Erosion Risk Management Strategy for England (2011)

Living Waterways – Transform Places & Enrich Lives: Our 10 Year Strategy (2015)	Urban Waste Water Treatment (England and Wales) Regulations (1994)
Mainstreaming Sustainable Development (2011)	Waste Management Plan for England (2013)
Making Space for Nature: - A review of England's Wildlife Sites and Ecological Network (2010)	Water 2020 (2016)
Managing Significance in Decision-Taking in the Historic Environment (2015)	Water Act (2003)
Managing Water Abstraction (2021)	Water Environment (Water Framework Directive) (England and Wales) Regulations (2003)
Marine and Coastal Access Act (2009)	Water Environment (Water Framework Directive) (England and Wales) Regulations (2017)
Marine Plans – Northeast Inshore, Northeast Offshore (2021)	Water Environment (Water Framework Directive) (England and Wales) Regulations (2021)
Meeting our future water needs: a national framework for water resources (March 2020)	Water for Life – the Water White Paper (2011)
Narrative for Conserving Freshwater and Wetlands in England, Natural England (2016)	Water Framework Directive (Standards and Classification) Directions (England and Wales) (2015)
National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting: Making the country resilient to a changing climate (2018)	Water Industry Act (1991)
National Food Strategy (2020)	Water Resources Act (1991)
National Heritage Act (2002)	Water Resources Long Term Planning Framework (2015-2065) (2016)
National Infrastructure Strategy (2020)	Water Resources Management Plan Regulations (2007)
National Parks and Access to the Countryside Act 1949	Water Supply (Water Quality) Regulations (2016)
National Planning Policy Framework (2021)	Wildlife and Countryside Act (1981)
National Policy Statements for Energy Infrastructure (2011) (EN1-6)	
National Policy Statement for Waste Water (2012)	
National Policy Statement for Water Resources Infrastructure (2023)	
Natural Environment and Communities (NERC) Act (2006)	

National – Environmental Agency Plans

Areas of Water Stress: Final Classification (2021)	Catchment Flood Management Plans (CFMPs):
Better Sea Trout and Salmon Fisheries: Our Strategy for 2008-2021 (2008)	Grimsby and Ancholme CFMP (2009)
Business Plan for 2020 to 2025 (2018)	River Witham CFMP (2009)
Drought Plan (2022)	Louth Coastal CFMP (2009)
Environment Agency and Natural Resources Wales (2018) Water Resources Planning Guideline Customer Engagement Forum (2019)	North Norfolk CFMP (2008)
Environment Agency's approach to groundwater protection (2018)	Broadland Rivers CFMP (2008)
Environmental Assessment Guidance for Water Resources Management Planning (2021)	East Suffolk CFMP (2008)
Groundwater Protection: Policy and Practice (GPNote 3) (2013)	River Nene CFMP (2009)
Groundwater Protection Technical Guide (2017)	Great Ouse CFMP (2010)
Protect groundwater and prevent groundwater pollution, Environment Agency (2017)	River Welland CFMP (2009)
	North Essex CFMP (2008)

Water industry national environment programme (WINEP) (2022)
Water Industry Strategic Environmental Requirements (WISER) (2022)
Water Resources Planning Guidelines (WRPG), Environment Agency (2023) Water for People and the Environment: Water Resource Strategy – Regional Action Plan for East of England Region (2009)

Managing Water Extraction – Catchment Abstraction Management Strategies (CAMS) (2013):
The Grimsby, Ancholme and Louth CAMS (2006)

The Nene CAMS (2005)
The Steeping, Great Eau and Long Eau CAMS (Consultation Draft, Jan 2007)
The Welland CAMS (2007)
The Witham CAMS (March 2004)
The Broadland Rivers CAMS (2006); Update on Strategy Actions (2008)
The Combined Essex CAMS (Feb 2007); Update on Strategy Actions (2008)
The North Norfolk CAMS (March 2005); Update on Strategy Actions (2008)
The Cam and Ely Ouse CAMS (March 2007); Update on Strategy Actions (2008)
The North-West Norfolk CAMS (March 2005); Update on Strategy Actions (2008)
The East Suffolk CAMS (2008)
The Tees CAMS (2008)
Idle and Torne Abstraction Licensing Strategy (February 2013)

South Essex CFMP (2008)
River Tees CFMP (2009) [Anglian Water's Hartlepool supply area]

River Basin Management Plans:

Anglian River Basin Management Plan (2022)
Humber River Basin Management Plan (2022)
Thames River Basin Management Plan (2022)
Severn River Basin Management Plan (2022)

Regional – Anglian Water Plans and Strategies

Biodiversity Strategy Our Plan 2015 – 2020 (undated)
Business Plan for 2020 to 2025 (2018)
Drainage and Wastewater Management Plan (DWMP) (2023)
Drought Plan (2022)
Hartlepool Water: Our Biodiversity Priorities (May 2014)
Our net zero strategy to 2030 (2021)
Strategic Direction Statement 2020–2045 (2017)

Regional and Local

AONB Management Plans (various)
Babergh Local Plan 2011-2031: Core Strategy & Policies (adopted 2014)
Bedford Borough Local Plan (adopted 2020)
North East Lincolnshire Local Plan (adopted 2018)
North Essex Authorities' Shared Strategic Plan (Section 1, adopted 2021)
North Lincolnshire Local Development Framework (adopted 2011)

Braintree District Council Local Plan (adopted 2021)
Breckland Local Plan (adopted 2019)
Cambridgeshire and Peterborough Combined Authority (CPCA) Local Transport Plan (2020)
Canal & River Trust (2015) South East Waterway Fisheries & Angling Action Plan (2015)
Castle Point Saved Policies (adopted 2007)
Catchment Management Strategies (various)
Central Bedfordshire Council Local Plan (adopted) 2021)
Central Lincolnshire Local Plan (adopted 2017)
Colchester Borough Local Plan (adopted 2022)
Dedham Vale Management Plan 2021-2026
Durham Local Transport Plan 3 (LTP3) (2011)
Defra (2010) Eel Management Plans (various)
East Cambridgeshire Local Plan, (adopted April 2015)
East Lindsey Core Strategy (adopted 2018)
East Suffolk Coastal District Local Plan (adopted 2020)
Environment Agency (2013) Abstraction Licensing Strategies (CAMS process) (various)
Essex County Council Local Transport Plan (2011)
Fenland Local Plan (adopted 2014)
Fens Reservoir Strategic Resource Option (SRO) Gate 2 Report (2022)
Flood Risk Management Plans (FRMPs) (various)
Greater Norwich Development Partnership Joint Core Strategy (adopted 2014)
Greater Norwich Level 2 Strategic Flood Risk Assessment (2021) (covering Norwich, South Norfolk, and Broadland LPAs)
Hartlepool Local Plan (adopted 2018)
Huntingdonshire Local Plan (adopted 2019)
Ipswich Local Plan (adopted 2022)
Joint Norfolk and Suffolk County Council Natural Capital Assessment (2020)
Kings Lynn & West Norfolk Borough Council: Local Development Framework- Core Strategy (adopted 2011)
Lincolnshire County Council Local Transport Plan 5 (2022)
Lincolnshire Wolds Management Plan 2018-2023 (2018)
Local Biodiversity Action Plans (BAP) including Species and Habitats Action Plans (various)
Local Geodiversity Action Plans (LGAPs)
Local Nature Recovery Strategies (various, emerging)
Local Plan for the Broads (adopted 2019)
Local Wildlife Trust Strategies (various)
Mid Suffolk Core Strategy Focused Review (2012)
Milton Keynes Local Plan (adopted 2019)
Norfolk Environment Policy (2019)
Norfolk Local Flood Risk Management Strategy (2015) and Local Flood Risk Management Strategy Policy Review (2021)
North Norfolk draft Local Plan (2022)
North Northamptonshire Joint Core Strategy (2011-2031): Corby, East Northamptonshire, Kettering and Wellingborough (Adopted 2019)
North West of England and North Wales Shoreline Management Plan SMP2
Nottingham County Council Local Transport Plan (2011)
River Basin Management Plans (RBMPs), Defra and Environment Agency (2015)
Rochford District Council Local Development Framework Development Management Plan (adopted 20134) and Core Strategy (adopted 2011)
Shoreline Management Plans (SMPs) (various)
Southend-on-Sea Core Strategy (2007)
South East Lincolnshire Local Plan (adopted 2019)
South Kesteven Core Strategy District Council Local Plan (adopted 2020)
South Lincolnshire Reservoir (SLR) Gate 2 Report (2022)
Suffolk Coast and Heaths AONB Management Plan 2018 – 2023
Suffolk Local Transport Plan 2011-2031 (2011)
The Chilterns Management Plan 2019-2024 (2019)
West Northamptonshire Joint Core Strategy Local Plan (Part 1) (adopted 2014): Daventry, Towcester and Brackley
West Suffolk Local Plan (consisting of former Forest Heath and St Edmundsbury areas) Core Strategy's (adopted 2010)

Drought Plans (2022):

Affinity Water Drought Plan (2022)
Cambridge Water Drought Plan (2022)
Essex and Suffolk Water Drought Plan (2022)
Severn Trent Water Drought Plan (2022)
Thames Water Drought Plan (2022)
Yorkshire Water Drought Plan (2022)

Water Resource Management Plans 2024 (rdWRMP publications 2023):

National Park Management Plans (various)
Natural Capital Evidence Compendium for Norfolk and Suffolk (2020)
Natural Character Area Profiles (various)
Newark & Sherwood Amended Core Strategy (adopted 2019)
Norfolk (Local) Flood Risk Management Strategy (LFRMS) (2015)
Norfolk Coast Management Plan 2019-20244 – 2019
Norfolk County Council Local Transport Plan 2021-2036 (2022)

Affinity Water Draft WRMP24 (2022)
Cambridge Water Draft WRMP24 (2022)
Essex and Suffolk Water Draft WRMP24 (2022)
Severn Trent Water Draft WRMP24 (2022)
Thames Water Draft WRMP24 (2022)
Yorkshire Water Draft WRMP24 (2022)

3.4 Baseline Review

3.4.1 Alongside the PPP review, discussed in Section 3.3 above, a comprehensive set of baseline data was gathered and used within the SEA process. The baseline data applied in the assessment sits within a Geographic Information System (GIS), including components related to all of the topics listed in Schedule 2(6) of the SEA Regulations (2004). A summary of the characteristics of the baseline environment for each of these topics, as relevant to rdWRMP24 is set out below. A full list of all data used as baseline in the SEA's assessment process is presented in Appendix D: Baseline Review and Baseline Maps. The GIS database used for this SEA has been regularly updated, for example, the baseline related to the rdWRMP24 has been updated to include the data related to the new River Basin Management Plans (RBMP) published in December 2022, during the draft WRMP24's consultation period.

3.4.2 The structure of the baseline information was guided by the topics set out in Schedule 2 of the 2004 SEA Regulations. A summary of baseline information for each of these topics is provided below:

- **Biodiversity, flora and fauna** – The Anglian Water region overlaps with numerous sites designated and managed for their biodiversity values. This includes Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) in the UK's National Site Network (NSN) (previously part of the Natura 2000 network under the EU Habitats[19] and Birds[20] Directives), Ramsar sites (Wetlands of International Importance), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs). Marine Protected Areas (MPAs) and Marine Conservation Zones (MCZs) are also present along the coastline within the Anglian Water region. The Anglian Water region is rich in species and habitat diversity. Important biodiversity is present both within designated protected areas and priority habitats across the wider landscape including deciduous woodland, and wetland, coastal and estuarine habitats and species.
- **Water** – Anglian Water operates in the driest region of the UK, in areas classed as experiencing serious water stress. Local population growth, agriculture, and industry are expected to continue driving increases in demand, while climate change will pose challenges for the already limited supply. The water bodies in the Anglian Water region range from ephemeral chalk streams and aquifers to lowland fens and coastal marshes. They support a rich diversity of habitats and species some of which are of national and global significance. This increases the importance of good water resources management in the region. Key issues reported as affecting the ecological status of the region's water bodies include physical modifications, pollution from wastewater, and pollution from rural areas, among others (including abstraction of water).
- **Flood risk** – Within the Anglian Water region there is a risk of flooding from various sources, including coastal waters, surface water, groundwater, and reservoirs. Climate change is expected to cause the flood risk to increase, due to more frequent extreme weather events and sea level rise. Much of the land mass in the Anglian Water region already lies below sea level.
- **Soil** – Much of the soil in the Anglian Water region is derived from silt and peat deposits, making it highly fertile. Agriculture is the predominant land use, with extensive growing of arable crops such as cereals, rapeseed and potatoes, and also significant presence of livestock grazing. Intensive agriculture in some areas has also affected soil health, although

[19] The Council of the European Communities (1992). Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. *Official Journal of the European Communities.* Available at: The Habitats Directive - Environment - European Commission (europa.eu).

[20] The European Parliament and the Council of the European Union (2009). Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. *Official Journal of the European Union*. Available at: EUR-Lex - 32009L0147 - EN - EUR-Lex (europa.eu).

the agricultural land classification of the region is mostly Grade 2 (Very Good Quality) and Grade 3 (Moderate Quality), with large areas of Grade 1 (Excellent Quality). The soil in some areas is contaminated by urban development, derelict brownfield sites, and landfill sites.

- **Air** – Air quality in the region is generally good. There are some, relatively small, declared Air Quality Management Areas (AQMAs) where national air quality objectives are not being met. Motor vehicles are the main source of air pollutants, particularly in areas that experience heavy traffic. Agriculture can also contribute to local air quality issues originating from housed livestock and the spreading of slurries and manures.
- **Climatic factors** – Like the rest of the UK, the east of England is expected to experience warmer temperatures under climate change, particularly in the summer months. Annual precipitation is expected to decrease overall, with a small increase in winter but a larger decrease in summer. These climate changes will exacerbate water stress in the Anglian Water region. Extreme weather events are also predicted to occur more frequently as a result of climate change, increasing water-related risks such as flooding and drought.
- **Population, human health and economy** – Settlements in the Anglian Water region are comprised of a few large cities with many smaller towns, villages, and hamlets. The distribution of age among the population is similar to the UK average, and ethnicity is predominately White British with larger proportions of ethnic minorities in urban areas. Public health in Eastern England is generally considered better than the UK average, reflected through various indicators including life expectancy. As with the rest of the UK, the service sector dominates employment. Economic deprivation is considered low across most of the region, but with some small areas where it is higher.
- **Historic environment** – The Anglian Water region has a rich cultural heritage, reflected through numerous designated heritage assets including listed buildings, scheduled monuments, conservation areas, registered parks and gardens, and registered battlefields. There is also potential for currently unidentified heritage assets and archaeological remains to be present within the region.
- **Landscape** – The landscape in the Anglian Water region is comprised of lowlands, small hills and a long stretch of coastline. Agriculture dominates the landscape in rural areas. The Broads National Park partially overlaps with the Anglian Water region. The Anglian Water region also contains large Areas of Outstanding Natural Beauty such as the Lincolnshire Wolds and Norfolk Coast.
- **Material assets** – Significant transport infrastructure in the Anglian Water region includes Norwich International Airport, the East Coast Main Line railway and M1 motorway which pass through the region. Several other main trunk routes and major roads are also present. The major port of Felixstowe is within the Anglian Water area. In terms of resource use and waste, the recycling rate for Eastern England is the second highest of regions in England.
- **Natural capital** – The Anglian Water region contains all eight of the broad habitat types included within the UK's National Ecosystem Assessment (NEA), with farmland comprising the largest land cover type (73.3%), and urban (13.5%) and woodland (6.2%) habitats also making up a substantial portion of the land cover. These stocks of natural capital support a broad range of ecosystem services, providing benefits to society such as hazard prevention, climate regulation and opportunities for recreation, among others.

3.4.3 The baseline review identified three major influencers of future change in the Anglian Water region, which were climatic factors, population growth and material assets. Climate change is being driven by emissions of greenhouse gases at a global scale, with impacts in the Anglian Water region expected to continue intensifying through the WRMP's 25 year period. Concurrently, investment in the region is expected to increase to meet population growth and the amount of material assets such as housing, transport infrastructure, waste facilities and community facilities is likely to increase. This change has the potential to exacerbate key issues in the Anglian Water region, for example related to impacts on biodiversity, increasing demand

from a larger population, loss of agricultural land to development, and water availability. While not identified as key issues in the Anglian Water region, consideration should also be given to potential implications (positive and negative) for wider issues such as air quality, the historic environment, and the quality and character of landscapes.

3.4.4 Beyond the environmental topics listed above, it is recognised that the baseline can change over time, Appendix D: Baseline Review and Baseline Maps, contains information on the evolution of the future baseline. Such emerging trends and commitments can also be relevant within the SEA process, these include:

- New housing and infrastructure planned for Anglian Water's supply area (e.g. Oxford-Cambridge Arc and East West Rail)
- Commitments to Net Zero 2050
- The Government's levelling up agenda
- Developments around increased uptake of renewable energy and the potential development of a Hydrogen Economy
- An increased focus on the economic valuation of natural capital
- Wider geo-political uncertainty related to potential shifts in behaviour/economic focus following both the UK's exit from the European Union and the influence of Covid-19 on business and lifestyle choices

3.5 Environmental Protection Objectives and Opportunities

3.5.1 Drawing across the findings of the plans, policies and programme review (Appendix C) and the environmental and social baseline review (Appendix D), the following environmental protection objectives and opportunities were identified as having relevance to WRMP24 (Table 3.2).

Table 3.2: Environmental Protection Objectives and Opportunities

SEA Topic	Environmental Protection Objectives	Environmental Opportunities
Biodiversity, Flora and Fauna	• Conserve flora and fauna and their habitats (increase tree and woodland cover) • Conservation and wise use of wetlands and their resources • Protection of wild birds and their habitats • Halt overall biodiversity loss (decline in species populations) • Creation of green infrastructure • Adapt to the impacts of climate change • Support the Lawton recommendation for planning the management of water resources to: Make space for water and wildlife along rivers and around wetlands: - Recovering nature and enhancing the beauty of landscapes - Securing clean, healthy and productive and biologically diverse seas and oceans	• The rdWRMP24 has great potential to achieve BNG – either onsite or through contribution to wider actions across the rdWRMP24. • BNG opportunities include: habitat creation or enhancement, support Nature Recovery Networks and Strategies, connectivity of ecological networks to increase species resilience and introduction of vegetation to slow runoff and reduce flood risk, amongst others. In seeking to optimise the opportunity for biodiversity improvements, the rdWRMP24 process seeks to align with Local Nature Recovery Strategies as they become further developed.

SEA Topic	Environmental Protection Objectives	Environmental Opportunities
Population, Communities and Human Health	• Promote sustainable and healthy communities • Promote social inclusion and community participation • Monitor and provide information to consumers on drinking water quality • Adapt to the impacts of climate change • Support the Lawton recommendation for planning the management of water resources particularly connecting people to the environment to improve health and wellbeing	• The rdWRMP24 can engage with the local communities and look to maximise opportunities for recreation through enhancing access and the condition of the water environment, greenspaces or areas of the natural environment, alongside opportunities for recreation and tourism through future infrastructure investments, such as the two SRO projects in the rdWRMP24 plan area. • The plan will also help ensure a resilient and reliable water supply for our customers now and in the future, ensuring there is enough water for a growing population and to support sustainable economic growth.
Water	• In line with the National Framework for Water Resources deliver sustainability reductions as defined by WRE's environmental destination • Conservation and wise use of wetlands and their resources • Improve water quality and to avoid deterioration so all waters achieve their status objective as set out in the Water Framework Directive • Prevent or limit inputs of pollutants to water bodies and groundwater • Monitor and provide information to consumers on drinking water quality • Promote efficient use of water • Reduce and manage the risks of flooding • Support the Lawton recommendation for 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 - Securing clean, healthy and productive and biologically diverse seas and oceans	• The rdWRMP24's options – and the plan as a whole have the potential to reduce pressures on the water environment through sustainability changes to abstractions, and by developing options that lead to WFD improvements or avoid WFD deterioration.
Soil	• Protect best quality soils and agricultural land • Support the Lawton recommendation for planning the management of water resources, particularly using and managing land sustainably	• The rdWRMP24 may provide opportunities to positively affect agriculture, including options to increase raw water storage and supply and by partnering to support the development and implementation of the Environmental Land Management Scheme (ELMS), and related schemes

SEA Topic	Environmental Protection Objectives	Environmental Opportunities
Air	• Protect air quality and improve it in those areas that are above legally defined pollutant limits (most harmful air pollutants to human health)	• The rdWRMP24 may provide opportunities to help improve air quality in the plan area
Climatic Factors	• Aid the work Anglian Water is doing to align its operations to the Water UK Net Zero 2030 Strategy • Adapt to the impacts of climate change • Reduce and manage the risks of flooding • Support the Lawton recommendation for planning the management of water resources particularly to restore natural processes in river catchments, including in ways that support climate change adaptation and mitigation	• The rdWRMP24 considers the impact of climate change within option selection and thus incorporates measures to increase the resilience of options to a changing climate • The rdWRMP24 has the potential to influence the impacts of climate change on demand for water and how much is available to the environment, increasing the resilience to severe drought and other extreme events and stresses
Historic Environment	• Protect designated and non-designated cultural heritage assets including archaeology and built heritage and their related setting	• The rdWRMP24 may provide opportunities to protect archaeology and reduce effects on heritage assets and their setting
Landscape	• Protection of landscape character and quality • Creation of green infrastructure • Support the Lawton recommendation for planning the management of water resources to: - Using and managing land sustainably including embedding an “environmental net gain” principle into development (as supported by the draft Environment Bill 2020) • Recovering nature and enhancing the beauty of landscapes	• Consideration of the impacts of the landscape should be considered as part of the option development. There is potential for the rdWRMP24 to enhance the landscape. This may involve selecting certain materials or colours for the option or through planting or habitat creation
Material Assets	• Creation of green infrastructure • Promote efficient use of water • Increase resource efficiency and reduce natural resource use and waste sent to residual treatment • Create a green economy and promote sustainable growth - Support the Lawton recommendation for planning the management of water resources, particularly increasing resource efficiency and reducing pollution	• The rdWRMP24 has the opportunity to consider the use of resources within the option development and reduce the use of energy, materials and prevent waste generation

SEA Topic	Environmental Protection Objectives	Environmental Opportunities
Broader Objectives	• Support the Lawton recommendation for planning the management of water resources to: - Support the UK Government's 25 Year Plan to Improve the Environment: • Protecting and improving the global environment	• Align with the approach to applying six capitals thinking[21] in water company decision-making, consideration of implications for enhancing natural, social and human capital through the rdWRMP24

[21] As outlined on our website: https://www.anglianwater.co.uk/about-us/our-purpose

4 Environmental Assessment Methodology

4.1 Introduction

4.1.1 The Environmental Assessment method comprises several elements. The overall SEA Assessment Framework is described in this Chapter; this is used as the starting point for assessments of components of the rdWRMP24, the plan as a whole and alternative plans. It is also important to consider potential effects outside of the plan boundary, inputs from other environmental assessment processes and cumulative effects. The findings that result from the application of the assessment methodology are reported in subsequent Chapters (5-8) with assessment matrices for individual components of the rdWRMP24 available within Appendix A.

4.2 SEA Assessment Framework

The Overall Framework

4.2.1 The SEA Assessment Framework is grounded in the SEA topics set out in Schedule 2(6) of the 2004 SEA Regulations. The SEA scoping process (including: PPP, baseline and environmental objectives reviews), as described in Chapter 3, generated information relevant to the rdWRMP24's links to the environment to define, order and group a list of SEA Objectives. The SEA Objectives are derived from the framework used to underpin the Integrated Environmental Assessments (IEA) for the WRE Regional Plan. Minor edits were made to the SEA Objectives following feedback received on the WRMP24 SEA Scoping Report (Appendix B). The SEA Objectives are the component of the SEA assessment framework against which likely significant effects on the environment are identified, described and evaluated. The SEA Objectives are accompanied by a list of assessment questions, which are used as prompts to assist those undertaking the assessment to retain a broad view of issues that are relevant to the SEA Objectives they are associated with, this is particularly useful where the framework is applied to different types of options. Table 4.1 below sets out the framework, including its SEA topics, SEA Objectives and assessment questions.

Table 4.1: SEA Assessment Framework

SEA Topic	SEA Objective(s)	Assessment Questions/Sub-Themes
Biodiversity, flora and fauna	1. To protect designated sites and their qualifying features. 2. To deliver BNG, protect biodiversity, priority species and vulnerable habitats such as chalk rivers. 3. To avoid spreading and, where required, manage invasive and non-native species (INNS). 4. To meet WFD objectives relating to biodiversity.	• Is the option likely to affect the conservation status of any SPAs, SACs, Ramsar sites, SSSIs or locally designated sites? • Will the option provide opportunities to enhance and provide climate resilience to water dependent NSN sites/ features? • Will the option protect and enhance aquatic habitats and species, including freshwater fisheries and chalk rivers? • Will the option affect the marine environment, habitats and species (including MCZs and MPAs)? • Is the option likely to affect ancient woodland, Section 41 of the NERC act habitats and species of principal importance for the purpose of conserving biodiversity? • Will the option affect any habitats that support legally protected species or species of conservation concern?

SEA Topic	SEA Objective(s)	Assessment Questions/Sub-Themes
		• Is there potential for contribution to achieving 'favourable' conservation status or for creation of new Section 41 of the NERC act habitats? • Is the option likely to have an impact on current or future Nature Recovery Network? • Are there any opportunities for habitat creation or restoration? • Will the option contribute to the loss or gain in habitat connectivity? • Is there a possibility for INNS to be spread/introduced or for algal blooms to occur? • Is there an opportunity to improve biodiversity value through removal of INNS? • Will the option affect the capacity for priority habitats and species to move or adapt in response to climate change?
Population and Human Health	5. To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing. 6. To secure resilient water supplies for the health and wellbeing of customers.[22] 7. To increase access and connect customers to the natural environment, provide education or information resources for the public. 8. To maintain and enhance tourism and recreation.	• 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? • Will the option maintain or enhance tourism? • Does the option improve access to the natural environment for recreation, including those living within deprived areas? • Will the option have an effect on freshwater fisheries for recreational purposes? • Will the option have an effect on marine fisheries for recreational purposes?
Water	9. To reduce or manage flood risk, taking climate change into account. 10. To enhance or maintain surface water quality, flows and quantity.	• Is the option vulnerable to flood risk? • Will the option contribute to, or reduce the risk of flooding? • Will the option affect surface water quality or quantity? • Will the option affect ground water quality or quantity?

[22] Note – the WRE-derived findings use the term '*the community'* as opposed to '*customers'* as the regional group is not a water company and does not have customers.

SEA Topic	SEA Objective(s)	Assessment Questions/Sub-Themes
	11. To enhance or maintain groundwater quality and resources. 12. To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans. 13. To increase water efficiency and increase resilience of Public Water Supply (PWS) and natural systems to droughts.	• 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 protected waters for Shellfish? • Will the option affect chalk rivers and streams? • Will the option affect raw water quality? • Will the option reduce the flashy nature of surface waters? • Will the option slow the flow in upper catchments and reduce soil losses to river systems? • 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?
Soil	14. To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land, and geodiversity.	• Will the option affect high grade agricultural land? • Will the option promote the efficient use of land? • Will the option prevent soil erosion and retain soil stocks as a natural resource? • Will the option promote soil health? • Will the option involve use of brownfield or greenfield land? • Will the option prevent mineral sterilisation? • Will the option affect soil contamination or involve remediation? • Is the option likely to affect geodiversity, including SSSIs of geological importance?
Air	15. To reduce and minimise air emissions during construction and operation.	• Is the option in an air quality management area (AQMA)? • Will the option affect local air quality?
Climatic Factors	16. To minimise/reduce embodied and operational carbon emissions. 17. To introduce climate mitigation where required and improve the climate resilience of assets and natural systems.	• Will the option affect carbon or other greenhouse gas (GHG) emissions? • Does the option help drive us towards the goal of Net Zero? • 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, including impacts on wetting/drying of peat? • 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	18. To conserve/protect and enhance the historic environment including the	• Will the option affect designated or non-designated historic assets, sites and features?

SEA Topic	SEA Objective(s)	Assessment Questions/Sub-Themes
	significance of designated and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting.	• Will the option affect the setting and/or significance of a historic asset? • Will the option affect archaeology (including unknown archaeology)? • Will the option alter the hydrological conditions of water dependent heritage assets, including organic remains? • Will the option affect heritage assets at risk? • Will the option affect conservation areas or historic landscape/townscape areas?
Landscape	19. To conserve, protect and enhance landscape and townscape character and visual amenity.	• Will the option have an effect on the character of the landscape or townscape including tranquillity and views? • Will the option improve access to the countryside? • Will the option create or improve green infrastructure which contributes to access to the landscape? • Will the option protect and enhance designated landscapes and features?
Material Assets	20. To minimise resource use and waste production. 21. To avoid negative effects on built assets and infrastructure (including green infrastructure).	• Will the option reuse existing infrastructure? • Will the option minimise the use of resources? • Will the option reduce the production of waste? • Will the option affect built assets and infrastructure, including transport infrastructure? • Will the option avoid negative effects on existing green infrastructure? • Will the option create opportunities for enhancing existing green infrastructure?

4.2.3 In addition to influencing the plan process, one of the outcomes of the SEA is to identify the likely significant effects of the plan. In the assessment of the rdWRMP24 the findings per SEA Objective are evaluated and assigned to one of four categories, which provide the rating of the scale of effect. Effects that are rated as Major and Moderate are classified as 'significant effects'. The four ratings are shown in Table 4.2. The assessment rating is informed by the assessment questions for each SEA topic. Effects are separated between construction and operation phases. Within each of these, a rating is provided for positive effects and for negative effects. As such, every SEA objective considers whether likely significant effects will occur in relation to four distinct areas: Construction Negative, Construction Positive, Operation Negative, Operation Positive. This format of assessment helps to avoid trade-offs, by avoiding the potential 'cancelling out' of effects, which can occur when reporting an average in cases where both positive and negative effects are present.

Table 4.2: Significant Effects

Rating	Significant Effect
Major	Yes
Moderate	Yes
Minor	No
Neutral	No

Applying the SEA Framework

4.2.4 Environmental and social considerations, including the application of the SEA, have influenced the development of the rdWRMP24. This is set out in Chapter 5.

4.2.5 As part of influencing the development of the rdWRMP24, the SEA framework has been applied to the main components of the WRMP. The **components** are in two groups:

Policy decisions:

- Environmental destination and environmental ambition
- Licence Capping
- Drought resilience
- Demand Management: Demand Portfolios

Options:

- Demand Management Options (within the selected Portfolio, see above)
- WINEP Options
- Supply-side Options

4.2.6 In addition, these components are assembled to form **plans**. These are:

- Best Value Plan (Plan B)
- Three Alternative Plans (Plan A, C and D)

4.2.7 The three alternative plans are, for the purposes of SEA, considered to be the reasonable alternatives. They were selected as these were the alternative plans that were developed and used for comparison as part of the WRMP24 process, see rdWRMP24 Decision Making Report technical supporting document. Adaptive pathways were developed to consider how the Best Value Plan would respond during implementation of specific future changes. These pathways are not alternative plans in themselves, rather they are to test the BVP's response to change.

4.2.8 The SEA Assessment Framework has been applied to the components of the Best Value Plan (BVP) (Plan B), its reasonable alternatives (Plans A, C and D) and the adaptive pathways approach. The results for the individual components (Policy decisions and Options) are reported in Appendix A, in the form of SEA matrices. The SEA's likely significant effects findings for the rdWRMP24's BVP (Plan B) are reported in Chapter 6. The equivalent SEA findings for rdWRMP24's three alternative plans are reported in Chapter 7, which also includes the assessment findings related to the BVP's (Plan B) adaptive pathways.

4.2.9 The findings for the four plans are based on residual effects for the components (i.e. the options and policy decisions) from which they are comprised. This means that where the option has potential to result in significant effects, relevant mitigation measures have been identified. The options are then reassessed with the mitigation measures applied. Any remaining significant effects after the mitigation is applied are 'residual effects'. Therefore, the findings reported in Chapter 6 and Chapter 7 assume that the identified mitigation measures have been applied. The mitigation measures for each option are identified in the individual option assessment (Appendix A) and a summarised collation of these measures are presented in Chapter 9's Table 9.1.

4.2.10 Specific SEA Objectives are informed from outputs from the other environmental assessments. – Section 4.4, below, explains how these inputs inform the findings for specific SEA Objectives.

4.2.11 The findings from applying the SEA Assessment Framework to the four plans comprise the consideration of interactions between the various components that are included within the plan alternative that is being assessed (Plan A, B, C or D). This ensures that the SEA considers

where different components may combine with each other to create a different or additional effect on a receptor.

Additional methodology for supply-side options

(a) Option High Level Screening

4.2.12 As a precursor to the application of the SEA Assessment Framework, high-level environmental screening assessments for the rdWRMP24 supply-side options were completed. This was undertaken to highlight environmental risks and constraints at an early stage in the options development process, in accordance with UKWIR (2021) Environmental Assessment Guidance For Water Resources Management Plans And Drought Plans (ref. 21/WR/02/15). The environmental screening findings were used to inform rejection of options on the basis of the inability to avoid potentially significant environmental effects, or to identify suitable mitigation measures to be incorporated into option development. The results were also taken forward into the rdWRMP24 SEA and HRA assessments. Full details about the development of Anglian Water's supply-side options for WRMP24 can be found in rdWRMP24 *Supply-side option development technical supporting document*.

4.2.13 The screening was structured around the following key environmental topics which have the potential to be significantly affected, the designations and receptors assessed are outlined in Table 4.3:

- Ecology
- Historic Environment
- Water
- Landscape
- Community

Table 4.3: Environmental Designations/Receptors used in the High-Level Environmental Screening

Key Topic	Designations/Receptors	Sources
Ecology	Special Area of Conservation, Special Protection Area, Ramsar site, Site of Special Scientific Interest including geological SSSIs, National Nature Reserve, Regionally Important Geological Site, Marine Protected Areas (including Marine Conservation Zones), Invasive Non-Native Species	GIS datasets available from data.gov.uk
Historic Environment	Listed Buildings, Conservation Areas, Scheduled Monuments, Archaeological Areas, Registered Battlefields, Registered Parks and Gardens, World Heritage Site, Protected Wreck Site	GIS datasets available from data.gov.uk
Water	River Basin Management Plan and Water Framework Directive river water quality and flow indicators, shellfish waters, bathing water	RBMP and WFD – Environment Agency website Shellfish and bathing waters – GIS datasets available from data.gov.uk
Landscape	Area of Outstanding Natural Beauty, National Character Area, National Parks, Ancient Woodland	GIS datasets available from data.gov.uk
Community	Agricultural land, Transport infrastructure (motorways, A roads, national cycle routes, railway lines), overriding community benefit	GIS datasets available from data.gov.uk

4.2.14 GIS layers and data sourced from the websites referenced in Table 4.3, above, were used to map baseline information on the identified designations and receptors. Baseline maps were

overlayed with the options locations map to identify where potential interactions and negative effects may occur as a result of each of the options being implemented.

4.2.15 Each option was screened using the scoring system presented in Table 4.4. Along with the colour category, a risk narrative, high level mitigation measures, and how these were incorporated into the option development were provided as output from the high-level screening.

Table 4.4: High-Level Screening Scoring Definitions

Score	Definition
RED	Recommend rejecting option – further assessment and design alterations required
AMBER	Take option forward but further assessment and mitigation required
GREEN	Take option forward – minor/no effect on environmental assets

(b) Option Assessment

4.2.16 Anglian Water's detailed options-level assessment approach was aligned with the methodology of WRE's IEA process. This is in line with regulator expectations around regional and water company plan-making.

4.2.17 Each option was assessed using professional judgement, based on a description of the infrastructure required and a GIS map of its location / routing. The construction and operation of each option was considered against each of the SEA Objectives, as set out in the SEA Framework (Table 4.1). The assessment indicated whether the proposed option would help meet or prevent achievement of the SEA objectives. If it contributed to meeting the SEA objectives, then it was considered a positive effect. If the option prevents the SEA objective being met, then it was considered a negative effect. The assessment against the SEA objectives was strategic in nature, being based on the early-stage design of each option; as such, it is not undertaken to the level of detail that would be required for a project-level Environmental Impact Assessment (EIA).

4.2.18 The assessment was split into construction effects and operational effects. An option may have both positive and negative effects under a SEA objective. Positive and negative effects for both construction and operation were reported separately to provide more clarity for decision making on the timing and nature of each of the effects identified.

4.2.19 The level of effect was assigned using a qualitative scale ranging from positive effects (minor, moderate, major) to negative effects (minor, moderate, major), with neutral used for no or negligible effects. A narrative justification was provided to support the assessment using this scale. The datasets used and descriptions of scale of effect are presented in Table 4.5: , below. Where applicable, these datasets and scale of effect were also applied to the assessment of other components of the plans.

4.2.20 Other assessments and studies being undertaken as part of the rdWRMP24 were also used to inform the SEA options assessment. Some of these assessments were the driver for the SEAs objective's scoring, such as the INNS assessment in relation to the findings of SEA Objective 3, whereas others contributed alongside other considerations to determine the objective's scoring result, such as the HRA, WFD, NCA and BNG assessments. Information about these additional assessments is further outlined in Section 4.4.

4.2.21 Assessments were undertaken on whole options i.e. all elements of an option that are dependent on each other, and not the individual parts. For example, the assessment of a

reservoir option included the reservoir works themselves plus any works that are related to it such as transfers in/out and treatment.

4.2.22 Where there were several variations of an individual option, e.g. different transfer capacity, the assessment considered these variations and assessed them as part of the one whole option with the level of effect determined to ensure the predicted effects of the highest capacity were presented. Aspects of the option that may cause environmental harm were noted (e.g. if a particular variation might be more harmful).

4.2.23 A variable zone of influence was determined (ZoI) for each receptor based on the sensitivity of receptors to impacts. Some key receptors and assets were only considered if there was a direct intersection (such as allotments and woodland), as options are only anticipated to have a detrimental impact on such assets when they are directly intersected. Other key receptors and assets were considered within 500m of the option (works) location in the assessment (such as listed buildings or Noise Action Planning Important Areas) as options may have detrimental impacts on these assets through audible or visual disruption. Other receptors were considered at greater distances. For example, up to 10km for European and National ecological designated sites such as SPAs, SACs, Ramsar sites, and SSSIs, which were considered by the identification of potential pathways from the option to the receptor. The latter based on qualifying species and habitats.

4.2.24 The temporal scale of effects was considered based on whether the effect would be permanent or temporary, and the duration of the effect. Permanent changes were considered as those which are irreversible (e.g. land use change from woodland to development) or will last for the near future (e.g. noise from operational road traffic). Temporary effects were considered as those which are short-term and which are reversible, these are generally related to construction (e.g. construction traffic).

4.2.25 Where potential negative effects were identified, mitigation measures (measures to avoid, reduce or offset negative effects) were identified as part of the assessment process and fed back into iterative option development. Options with major and moderate negative effects were required to include appropriate mitigation/further investigation or be flagged for rejection. Enhancement opportunities were also identified where the option could be used for the benefits of people and/or wildlife, e.g. reservoirs provide an opportunity to establish wetland habitats, or for recreational benefits.

4.2.26 As set out above, the effects of each option were assessed pre-mitigation and post-mitigation (residual effects). At the option assessment level the post-mitigation (residual effects) assumed that all options would include standard environmental controls, often referred to as ‘best practice’. The mitigation measures (which include measures which are standard environmental controls/best practice) are collated in Chapter 9. The standard environmental controls that were assumed to apply to all options are set out below:

- No surface water (river) abstractions will be able to reduce the water levels below the minimum flow and level agreed for that river.
- Construction works will be undertaken according to existing good practice to manage impacts on site, such as dust creation, noise and vibration, and disturbance.
- Environment Agency Pollution Prevention Guidance will be followed during construction.
- Good practice construction management includes using construction environment management plans (CEMPs), construction and logistics plans (including construction traffic management plans (CTMPs), waste management plans, etc.
- Sites would be surveyed for species/habitats prior to construction. Non-native species would be identified, and methods/works put in place to avoid spreading them during construction.

- Construction sites situated in a flood zone will have appropriate plans in place to manage the site in the event of flooding, e.g. management of materials and/or equipment likely to cause pollution.
- Health of construction workers would be managed on site using good practice such as avoidance, or personal protective equipment. Where in-river working is proposed, the potential for the transmission of waterborne infectious diseases (e.g. Leptospirosis, Cyanobacteria, Gastro-intestinal illness, and Hepatitis A) during construction of the new infrastructure would be managed appropriately.
- Construction sites will be in adherence to the Considerate Contractor Scheme, including engagement with the local community.
- Construction methods to be used are sympathetic and reduce effects on the surrounding landscape e.g. suitable hoardings.
- Any required consents will be obtained prior to undertaking works, e.g. tree preservation orders, listed building consent.
- Safe access will be available for pedestrians, vehicles, bicycles, horses, etc. during construction. Any roads, footpaths, cycleways that are consented to be closed during construction will be re-instated to their original or better condition following completion of the works.
- The WFD assessment assumes that standard best practice construction measures and operational procedures are employed, meaning that some options are assumed to be compliant with the objectives of the WFD and require no further assessment.
- Where options involve disturbance of land for pipeline laying, the land will be restored to its original or better condition on completion of the works.
- Where options involve works crossing roads or Public Rights of Way, appropriate diversions and signage will be implemented, and roads/paths will be restored to their original or better conditions following completion of the works.
- Where options involve loss of agricultural land, Anglian Water's policy on compensation and land requisition will be followed.
- Options that use energy, either during construction and/or operation, will use the energy mix available at the time from the UK energy grid.

4.2.27 Individual reports were not produced for all topics, (including the Historic Environment). However, the effects on the Historic Environment, and other topics for which individual reports have not been produced, have influenced the option level assessments. Early consideration of the potential impact on heritage assets and their setting is important to avoid harm at the earliest stage. This has ensured that the Historic Environment has been considered by assessing the options against numerous datasets and avoiding any interactions with the features they represent. The datasets selected were for nationally designated heritage assets and areas. These datasets were:

- National Heritage List for England (NHLE) including: World Heritage Sites; Conservation Areas; Scheduled Monuments; Grade I, II* and II Listed Buildings; Grade I, II* and II Registered Parks and Gardens; Registered Battlefields; Protected Wrecks.

4.2.28 A buffer of 500m was applied to these features and if the option was found to be present within this area, the potential effect was assessed and recorded within the Historic Environment SEA Objective, mitigation was proposed, and the residual effect adjusted accordingly. Identifying these potential interactions at an early stage, provides an opportunity for the Historic Environment to influence the development of the options as they progress beyond the plan making stage. This approach was considered appropriate at the plan making stage to inform the strategic assessment of the rdWRMP24. This was done on an individual option basis, at an inter plan and intra plan assessment.

4.2.29 The outputs from the SEA process produced a series of four metrics for each option. The four metrics were positive construction, negative construction, positive operation, and negative operation. These were used to help inform plan decision-making. See Chapter 5 and the rdWRMP24's Decision Making Report technical supporting document.

4.2.30 The SEA assessments for the options are summarised in Chapters 6 and 7 and presented within Appendix A.

Table 4.5: SEA Datasets and Definitions of Scale Used for Option Level Assessment

SEA Topic	Datasets/Key Themes	Effect	Description	
Biodiversity, Flora, Fauna:	SPA SAC Ramsar site SSSIs MPA MCZ NNR LNR Priority habitats and species Non-designated sites Terrestrial, aquatic and marine habitats, species and protected sites Green networks and corridors (e.g. foraging areas and commuting routes, migration routes, hibernation areas etc. at all scales)	**+++**	Major Positive	The option would result in a major enhancement on the quality of designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat quality and availability. The option would result in a major increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or large amounts of creation or enhancement of habitat, promoting a major increase in ecosystem structure and function. The option would result in a major reduction or management of INNS. The option delivers BNG of +30%. The option contributes to addressing failure of WFD Good Ecological Status/Good Ecological Potential.
		++	Moderate Positive	The option would result in a moderate enhancement on the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a moderate increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or moderate amounts of creation or enhancement of habitat, promoting a moderate increase in ecosystem structure and function. The option would result in a moderate reduction or management of INNS. The option delivers BNG of +20%. The option contributes to addressing failure of WFD Good Ecological Status/Good Ecological Potential.
		+	Minor Positive	The option would result in a minor enhancement of the quality of designated and/or non-designated sites/habitats due to changes in flow or groundwater levels, water quality or habitat creation and enhancement measures. The option would result in a minor increase in the population of a priority species. Effects could be caused by beneficial changes in water flows/water quality, or small amounts of creation or enhancement of habitat, promoting a minor increase in ecosystem structure and function. The option would result in a minor reduction or management of INNS. The option delivers BNG of +10%.
		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 or BNG.
		-	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 and function. The option would result In a minor increase or spread of INNS. The option results in BNG loss of <10%.
		--	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 moderate loss or degradation of habitat leading to a moderate loss of ecosystem structure and function. The options would result in a moderate increase or spread of INNS. The option results in BNG loss of 10% to 20%. The option results in the likely deterioration of WFD classification.

SEA Topic	Datasets/Key Themes	Effect	Description	
		---	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 results in BNG loss of 20% or more. The option would result in a major increase or spread of INNS. The option results in the deterioration of WFD classification.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.
Population, Human Health:	Noise action important area Indices of Multiple Deprivation 2015 Functional site: - Schools - Medical facilities OS Greenspace dataset: - Allotments - Bowling green - Cemetery - Golf course - Sports facility - Play space - Playing field - Public park or garden - Religious grounds - Tennis courts Natural England–- Country Parks National Parks Section 15 open access areas cRoW S4 Conclusive Registered Common Land	**+++**	Major Positive	The option leads to major positive effect on the health of local communities and will ensure that surface water and bathing water quality is maintained within statutory limits. The option creates new, and significantly enhances existing, recreational facilities, publicly accessible greenspace and/or tourism within the operational area.
		++	Moderate Positive	The option leads to positive effect on the health of local communities and will ensure that surface water and bathing water quality is maintained within statutory limits. The option enhances existing, recreational facilities, publicly accessible greenspace and/or tourism within the operational area.
		+	Minor Positive	The option has a temporary positive effect on the health of local communities and will ensure that surface water and bathing water quality is maintained within statutory limits.
		0	Neutral	The option would not result in any effects on human health and existing recreational facilities and/or tourism.
		-	Minor Negative	The option has a temporary effect on human health (e.g. noise or air quality). The option reduces the availability and quality of existing recreational facilities and/or tourism within the operational area.
		--	Moderate Negative	The option results in the permanent removal of existing recreational facilities, publicly accessible greenspace and/or tourism within the operational area.
		---	Major Negative	The option has a significant long-term effect on human health (e.g. noise or air quality). The option results in the removal of existing recreational facilities, publicly accessible greenspace and/or tourism within the operational area.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.
Water:	Environment Agency Flood Defences Environment Agency Main Rivers Flood Zones 2 and 3 Surface Water Features WFD River Water Body Catchments WFD River Water Bodies Cycle 2 Bathing Waters (for desal options) Shellfish Waters (desal options) Source Protection Zones WFD Groundwater Bodies	**+++**	Major Positive	The option results in addressing failure of WFD Good Ecological Status/Good Ecological Potential. The option would result in a major improvement to flood risk. The option would result in a major improvements in water efficiency, reduces demand and improves resilience.
		++	Moderate Positive	The option achieves savings through demand management and does not require abstraction to achieve yield. The option contributes to addressing failure of WFD Good Ecological Status/Good Ecological Potential. The option would result in a moderate improvement to flood risk. The option would result in a moderate improvements in water efficiency, reduces demand and improves resilience.
		+	Minor Positive	The option achieves savings through demand management and does not require abstraction to achieve yield. The option would result in a minor improvement to flood risk. The option would result in a minor improvements in water efficiency, reduces demand and improves resilience.
		0	Neutral	The option would have no discernible effect on river flows or surface/coastal water quality or on groundwater quality or levels. The option would not have an effect on or be affected by flood risk.
		-	Minor Negative	The option would result in minor decreases in river flows. River and/or coastal water quality may be affected and lead to short term or intermittent effects on receptors (e.g. designated habitats, protected species or recreational users of rivers and the coastline) that could not be avoided but could be mitigated. The option would result in minor decreases in groundwater quality or levels. The option is located in Flood Zone 2. The option would result in minor decreases in water efficiency, increases demand and reduces resilience.

SEA Topic	Datasets/Key Themes	Effect	Description	
		--	Moderate Negative	The option would result in moderate decreases in river flows. River and/or coastal water quality may be affected and lead to long-term or continuous effects on receptors (e.g. designated habitats, protected species or recreational users of rivers and the coastline) that could not reasonably be mitigated. The option results in the likely deterioration of WFD classification. The option would result in moderate decreases in groundwater quality or levels. The option is located in Flood Zone 3. The option would result in moderate decreases in water efficiency, increases demand and reduces resilience.
		---	Major Negative	The option would result in major decreases in river flows. River and/or coastal water quality may be affected and lead to long term or continuous effects on receptors (e.g. designated habitats, protected species or recreational users of rivers and the coastline) that could not reasonably be mitigated. The option results in the deterioration of WFD classification. The option would result in major decreases in groundwater quality or levels. The option is located in Flood Zone 2 or 3 and further contributes to flood risk. The option would result in major decreases in water efficiency, increases demand and reduces resilience.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.
Soil:	Agricultural Land Classification Landfill sites – authorised and historic	+++	Major Positive	The option would result in a major enhancement on the quality of soils through the implementation of remediation or other measures.
		++	Moderate Positive	The option would result in a moderate enhancement on the quality of soils through the implementation of remediation or other measures.
		+	Minor Positive	The option is located on a brownfield site and has no effect on soils or existing land use. The option results in the remediation of contaminated land.
		0	Neutral	The option would not result in any effects on soils or land use.
		-	Minor Negative	The option is not located on a brownfield site and/or results in a minor loss of best and most versatile agricultural land or is in conflict with existing land use. The option results in land contamination.
		--	Moderate Negative	The option will result in a moderate loss of best and most versatile agricultural land or is in substantial conflict with existing land use. The option results in land contamination
		---	Major Negative	The option will result in a major loss of best and most versatile agricultural land or is in substantial conflict with existing land use. The option results in land contamination.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain
Air:	Air Quality Management Areas Air quality monitoring sites	+++	Major Positive	The option would result in a major enhancement of the air quality within one or more AQMAs.
		++	Moderate Positive	The option would result in a moderate enhancement of the air quality within one or more AQMAs.
		+	Minor Positive	The option would result in an enhancement of the air quality.
		0	Neutral	The option would not result in any effects on Air Quality and AQMAs.
		-	Minor Negative	The option would result in a decrease of the air quality.
		--	Moderate Negative	The option would result in a decrease of the air quality within one or more AQMAs.
		---	Major Negative	The option would result in a major decrease in the air quality within one or more AQMAs.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.
	Option Carbon data UKCP18 climate data Sea level rise projections	+++	Major Positive	The option will generate significant additional zero carbon energy that can be fed back into the grid/reduce carbon emissions The option will increase resilience/decrease vulnerability to climate change effects. The option will result in a major increase in carbon sequestration.

SEA Topic	Datasets/Key Themes	Effect		Description
Climate Factors[23]**:**		**++**	Moderate Positive	The option will increase resilience/decrease vulnerability to climate change effects. The option will result in a moderate reduction in operational carbon emissions
		+	Minor Positive	The option will increase resilience/decrease vulnerability to climate change effects. The option will result in a minor reduction in operational carbon emissions.
		0	Neutral	The option would have no discernible effect on greenhouse gas emissions, nor would the option increase resilience/decrease vulnerability to climate change effects.
		-	Minor Negative	The option will have a minor impact on resilience/decrease vulnerability to climate change effects. The option will result in a minor increase in carbon emissions during construction. The option will result in a minor increase in carbon emissions during operation.
		--	Moderate Negative	The option will have a moderate impact on resilience/significantly decrease vulnerability to climate change effects. The option will result in a moderate increase in carbon emissions during construction. The option will result in a moderate increase in carbon emissions during operation.
		---	Major Negative	The option will have a major impact on resilience/significantly decrease vulnerability to climate change effects. The option will result in a major increase in carbon emissions during construction. The option will result in a major increase in carbon emissions during operation. The option will result in a major release of previously sequestered carbon.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.
Historic Environment:	Listed buildings: - Grade I listed structures - Grade II* listed structures - Grade II listed structures Registered Parks and Gardens: - Grade I Registered Parks and Gardens - Grade II* Registered Parks and Gardens - Grade II Registered Parks and Gardens Protected Wrecks Registered Battlefields Scheduled Monuments Conservation Areas World Heritage Sites	**+++**	Major Positive	The option will result in enhancements to designated heritage assets and/or their setting, fully realising the significance and value of the asset, such as: • Securing repairs or improvements to heritage assets, especially those identified in the Historic England Buildings/Monuments at Risk Register • Improving interpretation and public access to important heritage assets
		++	Moderate Positive	The option will result in enhancements to designated heritage assets and/or their setting. Improving interpretation and public access to important heritage assets.
		+	Minor Positive	The option will result in enhancements to non-designated heritage assets and/or their setting.
		0	Neutral	The option will have no effect on cultural heritage assets or archaeology.
		-	Minor Negative	The option will result in the loss of significance of undesignated heritage assets and/or their setting, notwithstanding remedial recording of any elements affected. There will be limited damage to known, undesignated archaeology important sites with a consequent loss of significance only partly mitigated by archaeological investigation.
		--	Moderate Negative	The option will result in the loss of significance of undesignated heritage assets and/or their setting, notwithstanding remedial recording of any elements affected. The option will diminish of significance of designated heritage assets and/or their setting, notwithstanding remedial recording of any elements affected.
		---	Major Negative	The option will diminish the significance of designated heritage assets and/or their setting such as: • Demolition or further deterioration in the condition of designated heritage assets especially those identified in the Historic England Buildings/Monuments at Risk Register • Loss of public access to important heritage assets and lack of appropriate interpretation • There will be major damage to known, designated archaeology important sites with a consequent loss of significance only partly mitigated by archaeological investigation
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.
Landscape:	Areas of Outstanding Natural Beauty National Character Areas Green Belt land National Park	**+++**	Major Positive	The option results in new, above ground infrastructure that significantly enhances the local landscape, townscape or seascape.
		++	Moderate Positive	The option results in new, above ground infrastructure that has a moderate positive effect on the local landscape, townscape or seascape.
		+	Minor Positive	The option results in new, above ground infrastructure that has a minor positive effect on the local landscape, townscape or seascape.
		0	Neutral	The option would not result in any effects on the local landscape, townscape or seascape.

[23] A qualitative carbon assessment was undertaken as part of the SEA and this has been used to inform the Climate Change Objective. A quantitative carbon assessment (for embodied carbon and operational carbon) was undertaken for the individual options as part of the C55 process, this was used as a metric within best value decision making and influenced the selection of the plan.

SEA Topic	Datasets/Key Themes	Effect	Description	
		-	Minor Negative	The option results in new, above ground infrastructure that has a minor negative effect on the local landscape, townscape or seascape.
		--	Moderate Negative	The option would have a moderate negative effect on a designated landscape or feature (i.e. significant visually intrusive infrastructure) whose effects could not be reasonably mitigated. The option results in new, above ground infrastructure that has a moderate negative effect on the local landscape, townscape or seascape.
		---	Major Negative	The option would have a negative effect on a designated landscape or feature (i.e. significant visually intrusive infrastructure) whose effects could not be reasonably mitigated. The option results in new, above ground infrastructure that has a major negative effect on the local landscape, townscape or seascape.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.
Material Assets	Transport: - Major roads – A roads - Major roads motorway - Railway line - National cycle route - National trails	+++	Major Positive	The option will reuse or recycle substantial quantities of waste materials and any new infrastructure will incorporate substantial sustainable design measures and materials. There will be no increase in energy consumption. The option involves reducing leakage from the supply network or is a water efficiency option with a yield of >5 Ml/d.
		++	Moderate Positive	The option will reuse or recycle moderate quantities of waste materials and any new infrastructure will incorporate some sustainable design measures and materials. There will be no increase in energy consumption. The option involves reducing leakage from the supply network or is a water efficiency option with a yield of <5 Ml/d.
		+	Minor Positive	The option will reuse or recycle a limited quantity of waste materials and any new infrastructure will incorporate some limited sustainable design measures and materials. There will be no increase in energy consumption. The option involves reducing leakage from the supply network or is a water efficiency option with a yield of <5 Ml/d.
		0	Neutral	The option would not result in any effects on material assets.
		-	Minor Negative	The option will require new infrastructure with only limited opportunities for the reuse or recycling of waste materials. There are limited opportunities for sustainable design or the use of sustainable materials. The option results in a minor increase in energy consumption with no renewable energy options. The option results in a minor disruption on built assets and infrastructure, including transport.
		--	Moderate Negative	The option will require new infrastructure with only limited opportunities for the reuse or recycling of waste materials. The option results in a moderate increase in energy consumption with no renewable energy options. The option results in a moderate disruption on built assets and infrastructure, including transport links.
		---	Major Negative	The option will require significant new infrastructure that cannot be provided through the reuse or recycling of waste materials. There are no opportunities for sustainable design or the use of sustainable materials. The option results in a major increase in energy consumption with no renewable energy options. The option results in a major disruption on built assets and infrastructure, including transport links.
		?	Uncertain	From the level of information available the effect that the option would have on this objective is uncertain.

4.3 Effects outside the WRMP Boundary

4.3.1 There is potential for selected options and plan alternatives in Anglian Water's WRMP24 plan-making process to have effects outside the company's water supply area – the boundary of the plan. For example, new supply options included abstractions of water from catchments that extend beyond the Plan's boundaries and there are other options close to the plan boundary that could effect change in adjacent areas. The assessments using GIS data included a buffer around the plan area so that additional receptors (such as designated sites) were captured in the assessment. The buffers were applied based on the WRMP24 options and expected impact pathways.

4.4 Other Environmental Assessments (WFD, HRA, NCA, BNG, INNS)

4.4.1 The WRMP, option development and selection process were informed by several other environmental assessments as part of the WRMP24 development, as described in Chapter 1, above. These processes helped inform the SEA findings. This Section summarises each assessment in Table 4.6, with the full findings of each presented in the relevant sub-report.

Table 4.6: The influence of Other Environmental Assessments on the SEA Findings[24]

SEA Topic	SEA Objectives	Links with other environmental assessments
Biodiversity flora and fauna	1. To protect designated sites and their qualifying features.	Part of SEA results supplied by the HRA for NSN but other designated sites such as SSSI and National Nature Reserves were included under this objective and assessed under the SEA.
	2. To deliver BNG, protect and enhance biodiversity, priority species and vulnerable habitats such as chalk rivers.	Part of SEA results informed by the outputs of the assessment on the natural capital baseline, particularly priority habitat.
	3. To avoid spreading and, where required, manage INNS.	SEA results are fully derived from INNS risk assessment findings.
	4. To meet WFD objectives relating to biodiversity.	SEA results are fully derived from WFD assessment findings.
Population and Human Health	5. To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing.	Part of SEA results informed by the natural capital assessment on the impacts on green space.
	8. To maintain and enhance tourism and recreation.	Part of SEA results informed by the natural capital assessment on the impacts on recreation and amenity value as defined by OrVAL.
Water	9. To reduce or manage flood risk, taking climate change into account.	Part of SEA results informed by the natural capital assessment under natural hazard regulation.
	10. To enhance or maintain surface water quality, flows and quantity.	SEA results largely supplied by WFD assessment and natural capital assessment on the impacts on water purification. Note: The INNS findings may also contribute.
	11. To enhance or maintain groundwater quality and resources.	SEA results largely supplied by WFD assessment and natural capital assessment on the impacts on water purification.

[24] Note: Effects on the SEA Objectives 6, 7, 17, 18, 19, 20 and 21 across the SEA Objectives related to: Population and Human Health, Climate, Historic Environment, Landscape and Materials Assets were fully assessed by the SEA; as such, they are not repeated in the above table.

SEA Topic	SEA Objectives	Links with other environmental assessments
	12. To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans.	SEA results are fully derived from the WFD assessment findings.
	13. To increase water efficiency and increase resilience of water supplies (including Public Water Supply (PWS)) and natural systems to droughts.	Part of SEA results informed by the natural capital assessment on the impacts on water regulation.
Soil	14. To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land, and geodiversity.	Part of SEA results informed by the natural capital assessment on the impacts on food provision.
Air	15. To reduce and minimise air emissions during construction and operation.	Part of SEA results informed by the natural capital assessment on the impacts on air pollutant removal.
Climatic Factors	16. To minimise/reduce embodied and operational carbon emissions.	Part of SEA results informed by the natural capital assessment on the impacts on climate regulation (carbon sequestration).

Habitat Regulations Assessment

4.4.2 The results of the HRA fed into the SEA objective on designated sites (Objective 1, see Table 4.6).

4.4.3 The Habitats Regulations have been amended by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, due to the UK's exit from the EU. The effect of these amendments is largely related to wording and requirements and processes remain the same, as protection levels remain unchanged. As such existing EU guidance[25] and preceding case law from the European Court of Justice (ECJ)[26] [27] [28] remains valid as a source of direction and interpretation of the requirements of the legislation, although it should be noted that much case law has now been incorporated into guidance and/or best practice. It also follows the UK Water Industry Research (2021) Environmental Assessment Guidance For Water Resources Management Plans And Drought Plans.

4.4.4 The first formal stage of the process involved a Test of Likely Significance (TOLS) this identified which supply options on the constrained list (list of feasible options) had the potential to generate likely significant effects to one or more NSN sites. Where potential risks were identified in the TOLS process a list of the NSN that needed to be covered in the next stage HRA-Appropriate Assessment (AA) were set out. The AA process is a more in-depth assessment process, requiring more specific information related to the design details of the proposed action (including mitigation) and details about the environmental features related to each NSN site included in its scope. At this strategic plan scale, only existing data related to the NSN sites was included and the design details of options that underwent assessment was inevitably based on

[25] European Commission (2018). Managing Natura 2000 Sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE [online] available at: EN_art_6_guide_jun_2019.pdf (europa.eu) (last accessed April 2022).
[26] Landelijke Vereniging tot Behoud van de Waddenzeecase/ Nederlandse Vereniging tot Bescherming van Vogels, European Court of Justice, Case C-127/02 'Waddenzee 2002'
[27] Sweetman et al v An Bord Pleanala, European Court of Justice, Case C-258/11 'Sweetman 2011'
[28] People over Wind/Sweetman v Coiltte Teorante, European Court of Justice Case C-323/17 'People over Wind 2017'

the information developed for plan-making process, rather than the detailed information that would accompany the application for a project seeking development consent. Options that were identified within the rdWRMP24 BVP and that the TOLS indicated required Appropriate Assessment have been assessed in the HRA report. Those options included in alternative plans (Plans A, C and D) requiring AA have also been assessed in this manner. Alongside the SEA cumulative effects assessment of the WRMP24, a HRA in-combination effects of the Draft Plan (BVP) as a whole was undertaken. The HRA methodology, including Test of Likely Significance and Appropriate Assessment, can be found in sub-report A – *Habitats Regulation Assessment*.

Water Framework Directive Assessment

4.4.5 The results of the WFD assessment fed into the SEA objectives on biodiversity and water (Objectives 4, 10, 11 and 12, see Table 4.6). The WFD assessments were undertaken following the All Companies Working Group (ACWG) WFD Assessment Guidelines and using the ACWG Assessment Spreadsheet. The first stage of the process (Level 1 – Basic Screening) identified any water bodies which needed to be 'screened in' and those screened-in were taken forward to the second stage of the process (Level 2 – Detailed Impact Screening). Mitigation and monitoring recommendations supported option development, and WFD results were used as part of the final assessment of the WRMP24 and its cumulative effects. The WFD Assessment and full method statement can be found in sub-report B – *Water Framework Directive Assessment*.

Invasive Non-Native Species

4.4.6 The results of the INNS assessment fed into the SEA objectives on biodiversity and water (Objectives 3 and 10, see Table 4.6). INNS information sheets were used to inform option development. Mitigation options appraisals were conducted for those options determined as of high risk for the potential spread of INNS. This involved reviewing known mitigation technologies and determining their effectiveness with regard to species type, transmission pathway and feasibility. Further information about the INNS Risk Assessment methodology can be found in sub-report D – *Invasive Non Native Species Risk Assessment*.

Natural Capital Assessment via assessment of selected Ecosystem Services

4.4.7 The results of the NCA fed into the SEA objective on designated sites (see Objective 1, see Table 4.6). The outputs of the NCA were used to inform option selection and feed into decision making as part of the Best Value Planning process. Expected changes in natural capital stocks were assessed for each option, along with implications for five ecosystem services outlined in the Water Resources Planning Guideline Environmental and Society Supplementary Guidance – biodiversity and habitat, climate regulation, natural hazard regulation, water purification, and water regulation. Note that biodiversity and habitat services were assessed using the BNG methodology outlined below. The full NCA's for the options are outlined within sub-report C – *Biodiversity Net Gain and Natural Capital Assessment*.

Biodiversity Net Gain

4.4.8 The results of the BNG fed into the SEA objective on enhancing biodiversity (Objective 2, see Table 4.4). BNG was considered at both the option and plan level. A biodiversity baseline was developed from spatial datasets of habitat inventories and assessed in line with the Defra BNG 3.0 metric, which assesses BNG based on land use change associated with each option. Note–- Since the update in 2022, the metric has been updated again by Defra's Biodiversity Metric 4.0, released in March 2023. However, the metric available at the time of the assessments has been discussed with Natural England and is considered appropriate to inform Anglian Water's rdWRMP24 decision-making process.

4.4.9 By quantifying the spatial extents of habitats and applying habitat-specific metrics, the approach aligned with the methodology of the WRPG Environmental and Society guidance. In this way, the approach also allowed consideration of biodiversity and habitat as an ecosystem service in the NCAs. Anticipated changes in land use as a result of option construction were used to assess change in the BNG scores. The full BNG assessments for the options are outlined within sub-report C - *Biodiversity Net Gain and Natural Capital Assessment*.

4.5 Cumulative Effects Assessment

4.5.1 Cumulative effects have been assessed using the same SEA framework, identifying significant effects against the SEA Objectives.

4.5.2 The assessment of the 'plan as a whole' means that the significant effects of the Best Value Plan reported in Chapter 6 include consideration of where individual components of the plan interact to generate effects. For example, a combination of policy decisions that return water to the environment, or a combination of supply-side options in a similar location. This approach is the same for the alternative plans reported in Chapter 7.

4.5.3 There is the potential for cumulative effects from the rdWRMP24 where the approach and options could interact with other plans, programmes and projects to generate additional or synergistic effects on the same receptor. The cumulative assessment methodology (described in full in Chapter 8) identifies two levels for this assessment. The first is looking at effects where the rdWRMP24 interacts with other plans; this includes other Anglian Water plans, RBMPs, and WRMPs being produced by neighbouring water companies. The second is looking at effects where the rdWRMP24 interacts with more discrete projects or development proposals (e.g. Local Plan allocations). This takes a receptor-based approach, then identifies where a significant effect may occur if the receptor is affected by both the rdWRMP24 and a project promoted by other organisations/developers.

4.6 Relationship between the WRMP24 and the WRE Regional Plan

4.6.1 The options put forward as part of Anglian Water's WRMP24 support development of the WRE Regional Plan by providing opportunities to address strategic water resource management issues.

4.6.2 The WRMP24 environmental assessment methodology has been informed by WRE's IEA approach to the assessment process.

4.6.3 The draft regional water resource management plan (Regional Plan) is based on water service areas covered by four companies: Affinity Water (Brett resource zone), Anglian Water, Cambridge Water (part of South Staffordshire Water), and Essex & Suffolk Water (part of Northumbrian Water). Development and selection of options for inclusion in the Regional Plan was informed by the Anglian Water WRMP24 environmental assessment process.

4.6.4 The majority of Anglian Water's operations sit within WRE, with the exception of its Hartlepool supply area, which sits within WReN, but only requires demand management options to deliver its required supply demand balance over the WRMP24 period. WRE is one of the five regional water resource planning groups that have been set up in England to deliver the National Framework for water resources. Unlike the other regional planning groups, which are water-company led, WRE has been established as a not-for-profit company limited by guarantee with a wide variety of interests represented on its Board and within the company. These include public water supply, regulators and statutory consultees, drainage authorities, local authorities, agri-food, environment, industrial and energy sectors, academia and the Broads Authority.

4.6.5 The purpose of WRE is to promote a long-term, multi-sector approach to water resource management and planning in Eastern England, building water resource systems which are

resilient to drought, flooding, and the long-term effects of climate change and growth. The WRE vision is for a flourishing environment and a strong economy, where water supplies are sustainable, affordable, and reliable.

5 Influencing the development of WRMP24

5.1 Introduction

5.1.1 This Chapter describes how environmental considerations have influenced the development of Anglian Water's rdWRMP24 including the Best Value Plan (BVP), alternative plans and their respective components. As initially explained in Chapter 2, prior to the selection of supply-side options, Anglian Water's plan-making is influenced by a number of aspects which dictate the supply demand forecast that each of the four alternate plans (A, B, C and D) respond to, these include:

- Policy Decisions:
  - Environmental destination (scenario selection – NB the timing of this is termed the "environmental ambition")
  - Demand Management (portfolio selection and timing of implementation)
  - Licence Capping (scenario selection, which dictates timing of implementation)
  - 1 in 500 year Drought Resilience (timing of implementation)
- WINEP requirements

5.1.2 For each decision above, Anglian Water is required to substantiate the respective decision(s) made regarding the portfolio/scenario selected and/or the timing of implementation. This Chapter outlines how environmental considerations have influenced these decisions, and conversely describe how the outcomes of these decisions has influenced the rdWRMP24 plan-making.

5.1.3 Beyond the above, in considering the options available for selection into any of the four alternative plans, there are three key points where the SEA process, and wider suite of environmental assessments (Figure 1.1), influenced the development of Anglian Water's rdWRMP24:

- Individual option level – all feasible demand and supply-side schemes were subject to an assessment against the full SEA framework of objectives.
- Economics of Balancing Supply and Demand (EBSD) modelling– the findings of the SEA assessments (informed by the other assessments e.g. HRA, WFD) were translated into **metrics**, alongside specific metrics from the BNG and monetised ecosystem services findings within the Natural Capital assessments (see Section 5.6). These environmental metrics were then fed into the multi criteria optimisation for the modelling used to inform the plan-making process. When running the investment model, this allowed runs to be calibrated according to those options that provide the most benefits or to exclude options with the higher environmental risks.
- Plan appraisal – alternative plans were developed – see rdWRMP24 Decision Making Report technical supporting document – which were assessed through the SEA process, as discussed below.

5.1.4 The environmental assessments of the supply-side options included in the four alternative plans are included in Appendix A, with their summarised findings presented in SEA Findings Tables in Chapters 6 and 7. A detailed report outlining the rationale and wider metrics used for decision making is provided in the rdWRMP24 Decision Making Report technical supporting document.

5.2 Policy decisions: Establishing the supply demand forecasts that form the basis of WRMP24s alternative plans

Environmental Destination

5.2.1 Section 5.1.1 establishes the key policy decisions for WRMP24, the first of which is environmental destination, and its timing environmental ambition, both of which are discussed below. To deliver long-term sustainability and environmental resilience, Anglian Water must identify an environmental destination scenario and Environmental Ambition strategy (the timing of delivery for the *Destination*) within their rdWRMP24 BVP and alternative plans. The combined outcome of these decisions result in reductions to existing Anglian Water public water supply abstractions that will lead to a reduction in deployable output (DO) in the WRMP24 supply forecast and thus affects which supply options are selected, as well as their DO and timing.

5.2.2 Three environmental destination scenarios were selected following consultation with the Environment Agency, WRE and internal Anglian Water stakeholders. These are known as BAU, BAU+ and Enhance, as defined below. They represent the possible range of environmental destination abstraction reductions, where BAU represents the lowest reductions to existing public water supplies and Enhance the greatest reductions.

5.2.3 In each case, the SEA process has assessed the respective scenario and a summary SEA matrix has been produced which outlines the predicted positive and negative environmental effects (Appendix A). Key aspects to note are that across the environmental destination scenarios benefits would be realised from retention of water within the environment – compared to the current baseline of existing public water supply abstraction. For example, improvements to the WFD status of water bodies and of important habitats for biodiversity. Thus, such benefits are related to the additional volume of water available to the environment after the selected *destination* has been delivered during the WRMP24 planning period (2025-2050). Similarly, negative effects, related to the environmental destination scenarios and reduced amount of water available for public water supply are proportional to the volume of water retained in the environment. A summary of each environmental destination assessment is provided below. SEA metrics were used as part of the decision-making for the environmental destination, as outlined in the rdWRMP24 Decision Making Report technical supporting document.

Business as Usual

5.2.4 **Business as usual (BAU):** The Business-as-usual scenario is to achieve flows to support ''Good Ecological Status'' under the Water Framework Directive. But it does not include the uneconomic water bodies. These are water bodies assessed as uneconomic to recover by the Environment Agency's Abstraction Plan by 2027. BAU delivers 180 Ml/d of water to the environment, through reductions to deployable output.

5.2.5 As a result of the implementation of the BAU environmental destination, there would be a number of moderate and major beneficial effects to protected sites, biodiversity and water bodies (surface and groundwater) and the resilience of these sites to a changing climate. This is due to the retention of 180 Ml/d of water within the environment. The BAU scenario is expected to benefit the local community (wellbeing, health and tourism) as well as local landscape and the historic environment. The latter because of the potential to aid preservation, through higher groundwater levels. Negative effects are anticipated as the BAU scenario could affect the resilience of public water supply, as well as resilience in access to water for local businesses. BAUs complete SEA findings can be found in the environmental destination Section of Appendix A.

Business as Usual 'Plus'

5.2.6 **Business as Usual Plus (BAU+):** This scenario achieves flows to support Good Ecological Status under the Water Framework Directive, as BAU, but goes further by including reductions to existing public water supply abstractions that will act to protect NSN sites (formerly known as European Protected Sites). When fully implemented around 241 Ml/d is expected to be kept within the environment, due to the deployable output reductions.

5.2.7 The effects of the implementation of the BAU+ scenario (which is the preferred scenario for the BVP [Plan B] as well as alternative plans A and C) are similar to those for BAU, however the scale of effects is greater as a further 61 Ml/d is retained within the environment. For instance, the positive effects on biodiversity, water environment, population and human health, as well as climate (described above) would be greater as BAU+ also includes European Protected Sites. Whereas the impacts on resilience are greater due to the additional 61 Ml/d retained within the environment (positive effects on resilience of natural systems) and greater restrictions on abstraction (negative effects on resilience of public water supply systems and related economic activities). BAU+'s complete SEA findings can be found in the environmental destination Section of Appendix A.

Enhance

5.2.8 **Enhance**: Achieves flows to support Good Ecological Status under the Water Framework Directive. It builds upon BAU+'s inclusion of NSN site by also adding in uneconomic water bodies, protection for chalk streams, sensitive headwaters and SSSIs. 368 Ml/d is expected to be kept within the environment, due to the deployable output reductions.

5.2.9 The Enhance scenario is the preferred scenario for alternative Plan D (Best for Environment and Social). Similar to the BAU+ the scale of effects is greater for Enhance, than BAU, as a further 188 Ml/d is returned to/retained within the environment (compared to the BAU) and 127 Ml/d (compared to the BAU+). The positive effects on biodiversity, water environment, population and human health, as well as climate (described above) would be greater as Enhance also includes uneconomic water bodies and chalk streams. Whereas the impacts on resilience are greater, due to the additional volumes of water retained within the environment and greater restrictions on abstraction. Enhances complete SEA findings can be found in the environmental destination Section of Appendix A.

Environmental Ambition

5.2.10 Alongside the above, Anglian Water have used the best values metrics – see Section 5.5. below – to identify the delivery year within WRMP24 for completing the total volume of abstraction cuts required by a given environmental destination (timing) and also explored profiling delivery, which would enable some catchments to achieve the benefits of environmental destination earlier than the completion date. The SEA best value metrics for the supply options, required to meet each environmental ambition scenario, were considered when selecting the preferred environmental ambition.

Licence Capping (Sustainability Reductions)

5.2.11 To ensure their abstractions are sustainable, Anglian Water must implement sustainability reductions to their licences. What this means for the rdWRMP24 is that there is a reduction in the maximum amount of water that Anglian Water could abstract from each of its existing public water supply abstraction licences, and a corresponding volume of water that is ensured to be retained within the environment after the new licence cap is introduced. This therefore reduces the deployable output within the supply forecast and necessitates a greater volume of water needed from new supply.

5.2.12 Anglian Water have eight different scenarios which were selected following consultation with the Environment Agency and internal Anglian Water stakeholders. They allow the range of variability in sustainability reductions to be explored, in terms of their impact on residual deficits and options selected. The rdWRMP2's Decision Making Report technical supporting document, provides greater details on this particular assessment process and identifies that of the eight scenarios developed for WRMP24, only four scenarios (those that deliver the required caps to Anglian Water's permanent abstraction licences after 2030) would be feasible for the plan to meet its statutory requirements to deliver a supply demand balance.

5.2.13 The outcome of this is that licence capping to recent actual average would be implemented in WRMP24 at some point between 2030 and 2036, with the maximum abstractable volume across Anglian Water's public water supply licences reduced by 181.9 Ml/d, with this volume of potentially abstracted water subsequently retained in the environment. The environmental implications (positive and negative) of which have been assessed through the SEA process and are presented within Appendix A. The WRMP24 outcome of this policy decision, achieved by all the feasible scenarios by 2036 is the same; as such a single SEA matrix is presented in relation to licence capping in Appendix A. However, the implications of the timing of this policy decision are discussed in the narrative comparison between Plans A, B, C and D, within Chapter 7, and the specific WFD implications of capping Anglian Water's permanent licences after 2030 are discussed in sub-report B – *Water Framework Directive Assessment*.

5.2.14 Overall, the implementation of the licence capping over the course of the rdWRMP24 is expected to be a significant beneficial effect on a number of receptors, due to the removal of the potential for Anglian Water to abstract beyond recent usage, to its current maximum licence cap. This therefore ensures water is retained within the environment (specifically groundwater and river systems)–- thereby having a positive effect on hydrologically linked biodiversity sites, water bodies (surface and groundwater) and also introduces an aspect of mitigation of climate change on these sites through the retention of water. Licence capping does, nonetheless, reduce the resilience of the public water supply. The complete SEA findings matrix on licence capping can be found in the Policy Decisions Section of Appendix A.

Drought Resilience

5.2.15 The timing of the implementation of the enhancing of Anglian Water's public water supply system to be resilient to a 1 in 500 year drought, is outlined within the rdWRMP24 Decision Making Report technical supporting document. This decision is key to Anglian Water as it helps to understand the time by which certain supply-side options need to be in place to ensure a supply demand balance is maintained when additional water must be retained from day-to-day operational use to enable improved resilience to extreme drought.

5.2.16 The SEA assessed the effects of the implementation of 1 in 500 year drought resilience within the WRMP24 period. Plan A and D would deliver this in 2039, whilst Plan B and C deliver it one year later in 2040. Given the implementation is the same in all cases, the one year difference – across the 25 year plan period – is considered to have negligible impacts on the SEA findings; as such, a single assessment matrix is presented for the environmental effects of 1 in 500 year drought resilience in Appendix A. The summarised findings of the assessment determined the following:

- There are a number of positive effects from the delivery of resilience to a 1 in 500 year drought, as it will secure resilient water supplies for the health and wellbeing of the communities for the whole region in a period of extreme drought.
- Negative effects from the resilience to a 1 in 500 year drought are possible, as retention of water for the purpose of drought resilience introduces a need for approximately 70 Ml/d of additional supply infrastructure to meet day to day operational demand options needs – and maintain the WRMPs statutorily required supply demand balance. The complete SEA

findings matrix on 1 in 500 year drought resilience can be found in the Policy Decisions Section of Appendix A.

5.3 Demand Options: Reducing the need for additional supply

5.3.1 Alongside the decisions on environmental destination and licence capping, which restrict the volume of water Anglian Water is able to abstract, is the requirement for Anglian Water to define their Demand Management Strategy (in this case, referred to as Portfolios). Thus, within their rdWRMP24 decision making, Anglian Water modelled four demand management portfolios, comprised from complementary elements of leakage reduction, smart metering and water efficiency interventions. Once implemented, demand management options reduce the need for a comparable volume of water to be generated from additional new supply. For instance, 50 Ml/d saved through demand management measures, reduces the associated need to be provided by supply-side options and the infrastructure associated with such options. For Anglian Water's Hartlepool region, it is expected that the suite of demand management scenarios will be applied and no supply-side options are required for Anglian Water's Hartlepool area.

Demand Option Portfolios

5.3.2 Anglian Water developed demand management programmes through the development of 'strategic portfolios'. Each strategic portfolio includes the completion of Anglian Water's smart metering rollout, additional leakage reduction and water efficiency sub-options, and has been built from the bottom-up, at Water Resource Zone level (actual modelling is conducted at the Planning Zone level and aggregated to Water Resource Zones).

5.3.3 Determining the level of demand management included in the plan-making and model runs is a further policy decision – as those set out in 5.2 above. To determine the preferential portfolio, Anglian Water modelled the demand management scenarios against their Best Value metrics, including an assessment against the SEA Metrics (see rdWRMP24's two demand management related technical supporting documents, as indicated in Figure 1.3). Table 5.1 illustrates the components of the Demand Management Portfolios.

Table 5.1: Components of demand management portfolios

Demand management portfolio	Government Interventions	Leakage	Metering	Water efficiency	NHH Demand Management Options (DMOs)
Baseline	Not included	AMP7	AMP7	AMP7	None
Extended Low	Included	24%	3AMP roll out	Low	Medium
Extended Plus	Included	31%	2AMP roll out	High	Medium
Aspirational	Included	38%	2AMP roll out	High	Medium
50% Leakage	Included	50%	2AMP roll out	High	Medium

5.3.4 Outputs from the Anglian Water modelling determined that 'Baseline' and 'Extended Low' would cause residual deficits which are unacceptable in the rdWRMP24 planning process (that is, not provide enough water saving).

5.3.5 The comparison of the remaining portfolios across the best value metrics demonstrates that increasing the amount of demand savings only marginally reduces the investment in supply-side options, but this comes with significant increase in cost for the delivery of the demand

management package. This is reflected in the other environmental metrics associated with the supply-side options which do not vary much between portfolios.

5.3.6 For the rdWRMP24 plan-making process, Anglian Water have chosen the Aspirational portfolio of demand management measures. This is more ambitious than Extended Plus and includes a higher percentage of leakage reduction which will contribute to the national target of 50% Leakage reduction. While the '50% Leakage' portfolio goes further towards the national target, it is not cost beneficial as the costs to deliver the additional leakage is disproportionately significant.

5.3.7 At the draft plan stage, three packages of demand management options were provided to the SEA for review (Extended Low, Extended Plus and Aspirational), with each including various proposals within them and having increasing levels of ambition. The dWRMP24 was based on the Extended Plus Portfolio. However, following the consultation and further work (as outlined in the paragraph directly above and in Section 2.5) Anglian Water has selected the Aspirational Demand Management Portfolio across rdWRMP24's four plans (Plans A, B, C and D). A summary of the environmental effects of each Demand Management Option portfolio is provided below. Appendix A includes the outputs of the SEA matrices for each of the four portfolios.

Extended Low Portfolio

5.3.8 The Extended Low Demand Management Strategy includes three option types. Metering (Smart and Other- Distribution Loss, Plumbing Loss, Supply-side pipes, Shared supplies monitoring); Water Efficiency (education/communication) and Leakage (Operational- Company side).

5.3.9 Effects from Extended Low Demand Management Options include no moderate or major beneficial or negative effects anticipated to result from this Strategy. As a result of the implementation of the Extended Low Demand Management Strategy, there would be no significant beneficial or negative effects.

Extended Plus Portfolio

5.3.10 The Extended Plus Demand Management Strategy includes three option types. Metering (Smart and Other- Distribution Loss, Plumbing Loss, Supply-side pipes, Shared supplies monitoring); Water Efficiency (education/communication) and Leakage (Operational– Company side).

5.3.11 Effects from Extended Plus portfolio include a number of moderate beneficial effects to protected sites, biodiversity, potential indirect benefits for chalk streams of keeping water within the natural environment and water bodies (surface and groundwater). The Extended Plus Demand Management Strategy is expected to be moderately beneficial to the local community (wellbeing, health and education). As a result of implementation, the Strategy would result in major beneficial effects to the increase of water efficiency and resilience of water supplies, and resilience of these assets to a changing climate. During construction, there would be a number of minor negative effects anticipated on protected sites, air emissions, embodied and operational carbon emissions, landscape, health and wellbeing, and material assets (resource use and effects on built assets and infrastructure).

Aspirational Portfolio (selected across rdWRMP24's four plan alternatives)

5.3.12 The Aspirational Demand Management Strategy includes three option types. Metering (Smart and Other- Distribution Loss, Plumbing Loss, Supply-side pipes, Shared supplies monitoring); Water Efficiency (education/communication) and Leakage (Operational- Company side).

5.3.13 Effects from Aspirational Demand Management Options include a number of moderate beneficial effects to protected sites, biodiversity, potential indirect benefits for chalk streams of

keeping water within the natural environment, water bodies (surface and groundwater) and landscape. The Aspirational Demand Management Strategy is expected to be moderately beneficial to the local community (wellbeing, health and social). As a result of implementation, the Strategy would result in major beneficial effects to the increase of water efficiency and resilience of water supplies, and resilience of these sites to a changing climate. During construction, there would be a number of minor negative effects anticipated on protected sites, soil, air emissions, embodied and operational carbon emissions, landscape, historic environment, health and wellbeing of the community, and material assets (resource use and effects on built assets and infrastructure).

50% Leakage Portfolio

5.3.14 The 50% Leakage Demand Management Strategy is the same as Aspirational (includes three option types). Metering (Smart and Other- Distribution Loss, Plumbing Loss, Supply-side pipes, Shared supplies monitoring); Water Efficiency (education/communication)). However, leakage is reduced to 50% as opposed to 38% under the Aspirational portfolio.

5.3.15 Effects from 50% Leakage include a number of moderate and major beneficial effects the same as those for the Aspirational Demand Management Strategy. During construction, there would be a number of negative effects anticipated, similar to those for the Aspirational Demand Management Strategy, however the scale of effects is greater. For instance, embodied and operational carbon emissions, health and wellbeing of the community, and material assets (resource use and effects on built assets and infrastructure) are anticipated to be a major negative effect.

Options within the Aspirational Demand Management Package

5.3.16 Following consultation on the dWRMP24, Anglian Water has reviewed and revised its policy decision in relation to demand management moving from the Extended Plus portfolio to the Aspirational portfolio across all four of the plan alternatives developed for rdWRMP24. As such, the environmental effects related to each of the options within the Aspirational portfolio have been assessed by the SEA, with a summary of the effects of each component part (e.g. smart metering, leakage reduction, government led interventions) presented below. These findings are also taken into account in the findings of the likely significant effects of the BVP (Plan B), presented in Chapter 6, and the alternatives plans (A, C and D), presented in Chapter 7.

Government led interventions

5.3.17 Government Led Interventions: activities within this DMO are beyond Anglian Water's control. This consists of mandatory water labelling of relevant products; the scheme is operated in association with Buildings Regulations and minimum standards to regulate the products that make it to market. This DMO requires development of the labelling policy and baseline minimum standards alongside making amendments to Building Regulations. It assumes three minimum standard interventions in years 5, 8 and 11 of the rdWRMP24 period.

5.3.18 This option runs alongside and is interlinked with the Smart Meters, Leakage and water efficiency (WEF), see below. Meeting the rdWRMP24 PCC target is very reliant on this DMO. It is a critical measure to achieving the desired supply demand balance. Within the Aspirational Package, this option delivers low savings of 3.52 Ml/d by the end of 2030 but scales up to 84.35 Ml/d savings by the end of the rdWRMP24 period (2050).

5.3.19 Effects from government led interventions include a number of moderate beneficial effects to biodiversity, soil, water bodies (surface and groundwater) and landscape. The interventions are also expected to be moderately beneficial to the local community (health, wellbeing and social). The interventions also include a number of major positive benefits to biodiversity, increasing water efficiency and resilience of water supplies, resilience of these sites to a changing climate,

and to the local community (education). During construction, the intervention is anticipated to cause moderate negative effects on air emissions and embodied and operational carbon emissions. Material assets will have moderate negative effects during both construction and operation. The SEA findings matrix related to this demand management option can be found in Appendix A of this report.

Leakage

5.3.20 Leakage: activities within this DMO include replacement of existing Anglian Water's water main assets (including climate change targeted mains replacement), find and fix within the pipeline system, and Customer Supply Pipe Leakage (CSPL) on shared supplies (supply pipes to more than one household).

5.3.21 This option runs alongside and is interlinked with the Smart Meters, WEF Household (HH), and Government Led Intervention DMOs. It is a critical measure to achieving the desired supply demand balance. Within the Aspirational Package, this option delivers 10.57 Ml/d savings by the end of 2030, and 44.92 Ml/d savings by the end of the rdWRMP24 period (2050). Savings associated with smart meter detection of CSPL have been allocated to the Smart Meter DMO.

5.3.22 It is important to note that in the rdWRMP24, this DMO comes at a high cost to achieve the Aspirational Package, particularly during AMP12 (2045-2050) at £128.16M per Ml/d of savings as leakage reduction targets have increased to 38% from 23.7% (compared to the dWRMP24).

5.3.23 Effects from Leakage include a number of moderate and major beneficial effects to biodiversity, water bodies (surface and groundwater), resilience in access to water supplies, resilience of these sites to a changing climate, landscape, and the resilience of water supplies to the local community (health and wellbeing). During construction, the activities in this DMO are anticipated to cause minor negative effects on protected sites, the historic environment, health and wellbeing of the local community (noise, traffic disruptions and air quality). The SEA findings matrix related to this demand management option can be found in Appendix A of this report.

Non-household water efficiency

5.3.24 Non-Household (Non-HH) Water Efficiency: activities in this DMO are dependent on Smart Meter rollout in Non-HH properties. Activities within this option include Non-HH Plumbing Loss repairs, Non-HH WEF visits and incentivisation, and Non-HH WEF audits across both smaller and larger customers (companies with a range of PHC between 300l/prop/day to 500,000l/prop/day).

5.3.25 This option is interlinked with the rollout of Smart Meters. It is a critical measure to achieving the desired supply demand balance. Within the Aspirational Package, this option delivers 9.95 Ml/d savings by the end of 2030, and 49.7 Ml/d savings by the end of the rdWRMP24 period (2050).

5.3.26 Effects from Non-HH WEF include a number of moderate and major beneficial effects on biodiversity, water bodies (surface and groundwater), resilience of public water supply as well as resilience in access to water, resilience of these sites to a changing climate and landscape. During operation, the activities in this DMO are anticipated to cause minor negative effects on air emissions, and both embodied and operational carbon emissions, due to the use of vehicles to carry out audit visits within the Anglian Water region. The SEA findings matrix related to this demand management option can be found in Appendix A of this report.

Household water efficiency

5.3.27 Water Efficiency- Household: activities in this DMO include the use of smart shower sensors and devices, a smart hub or monitoring usage, smart communities (linking multiple utilities on

one system), provision of personalised garden advice via a virtual assistant, community education and rewards, plumbing loss uplift, and leaky loos campaign.

5.3.28 This option runs alongside and interlinked with the Smart Meters and Government Led Interventions. It is a critical measure to achieving the desired supply demand balance. Within the Aspirational Package, this option delivers 9.4 Ml/d savings by the end of 2030, and 14.6 Ml/d savings by the end of the rdWRMP24 period (2050).

5.3.29 Effects from household water efficiency include a number of moderate and major beneficial effects on biodiversity, water bodies (surface and groundwater), resilience of public water supply as well as resilience in access to water, resilience of these sites to a changing climate, and landscape. The activities in this DMO are also expected to cause a number of major beneficial effects to the local community including, health and wellbeing, social, and education. During construction, the activities in this DMO are anticipated to cause minor negative effects on air emissions, embodied and operational carbon and material assets (resource use and waste production). The SEA findings matrix related to this demand management option can be found in Appendix A of this report.

Smart metering

5.3.30 Smart Metering: activities in this DMO include smart meter rollout and savings, leak investigation savings. Within the Aspirational Package, smart metering accounts for complete smart meter rollout across households in AMP8 with over 2,000,000 meters installed by 2030 (approximately half will be rolled out before rdWRMP24 starts). By the end of rdWRMP24 (2050) meter penetration will be at 94.8%. By 2025 this DMO delivers 18.1 Ml/d average savings, by the end of the rdWRMP24 cycle this will average savings of 31.9 Ml/d. Savings associated with smart meter detection leakage have been allocated to this DMO.

5.3.31 Effects from smart metering include a number of moderate and major beneficial effects to biodiversity, water bodies (surface and groundwater), resilience of public water supply as well as resilience in access to water, resilience of these sites to a changing climate, and landscape. The activities in this DMO are also expected to cause a number of moderate and major beneficial effects to the local community including, health and wellbeing, social, and education. During construction, the activities in this DMO are anticipated to cause minor negative effects on embodied and operational carbon, material assets (resource use and waste production), as well as moderate negative effects during construction and operation on air emissions. The SEA findings matrix related to this demand management option can be found in Appendix A of this report.

5.4 WINEP Options

5.4.1 The rdWRMP24 includes a series of catchment level options that will be delivered in the first five years of the plan period. These activities are defined by the WINEP and involve actions related to improving rivers that are considered to be negatively affected by water company abstractions. The selection of these options – which are then included in the rdWRMP – sit outside the plan-making process and is related to optioneering and cost benefit analysis undertaken within WINEP. The WINEP options identified form part of the rdWRMP24, as such the environmental benefits and impacts have been assessed through the lens of the SEA Framework.

5.4.2 The WINEP options included in rdWRMP24 have been assessed and an SEA findings matrix is available for each option in Appendix A. The ability of the rdWRMP24s environmental assessments to influence which WINEP options are selected is limited, due to the WINEP options being informed by the regulators. Nevertheless, as they are a formal component of the rdWRMP24 BVP, the environmental assessment findings related to the WINEP options have been used to inform the assessment of the plan as a whole (Chapters 6 and 7).

5.5 Supply Options: Creating a supply demand balance

5.5.1 As a result of the climate change and population growth challenges faced in Anglian Water's region, alongside the implementation of its WRMP24 i) Policy Decisions (5.2), ii) Demand Management (5.3) and iii) WINEP (5.4), there is a need for new supply-side options to ensure the plan meets its regulatory requirement to balance supply and demand. As outlined in the rdWRMP24 Decision Making Report technical supporting document, the potential deficit changes over time as the supply and demand forecast, policy decisions and demand management portfolio influence the modelling. The WRMP modelling resolves deficits by selecting new supply-side options from those available on Anglian Water's constrained list. Through this process and the application of Anglian Water's BVP Objectives, including environmental assessment metrics, the plan-making process defines the BVP Plan (Plan B) and its alternatives, this process is discussed further in Section 5.6 below.

5.5.2 In order to include supply-side options in its WRMP24 modelling, a detailed process is undertaken to identify potential future supply-side options that ultimately leads to the constrained list available to the model. The details of this process are set out in rdWRMP24's *Supply-side option development technical supporting document*. The SEA, and wider suite of environmental assessments (Figure 1.1) influenced the development and availability of supply-side options available to Anglian Water's WRMP24 modelling process. The influence of each process on the supply option decision-making is outlined in the following Sections. A breakdown of the supply option types is provided, in Section 2.3 of this report, with the specific options included in the Best Value Plan (Plan B) and three Alternatives (Plans A, C and D) presented in Tables within Chapters 6 and 7, respectively.

High-Level Screening

5.5.3 As a precursor to the application of the SEA Framework, high-level environmental screening assessments for the rdWRMP24 options were completed. This was undertaken to highlight environmental risks and constraints at an early stage in the options development process, in accordance with UKWIR (2021) Environmental Assessment Guidance For Water Resources Management Plans And Drought Plans (ref. 21/WR/02/15). The environmental screening findings were used to inform potential rejection of options on the basis of avoiding potentially significant environmental effects, and to identify suitable mitigation measures to be incorporated into option development. The results were also taken forward into the rdWRMP24 SEA and HRA assessments.

Options Assessment (Level 1)

5.5.4 Each option was assessed using environmental baseline data on a GIS and professional judgement of the effects per SEA objective, based on a description of the infrastructure required and a GIS map of its location/routing. The construction and operation effects of each option were considered against the SEA objectives, considering the assessment criteria (Table 4.1) and the evaluation criteria. The assessment indicated whether the proposed option would help meet or prevent achievement of the SEA objectives. If it contributed to meeting the SEA Objectives, then it was considered a positive effect. If the option prevents the SEA Objective being met, then it was considered a negative effect. The assessment against the SEA Objectives was strategic in nature, being based on the early-stage design of each option; as such, it is not undertaken to the level of detail that would be required for a project-level Environmental Impact Assessment (EIA).

5.5.5 As indicated the assessment split construction and operational effects, with each option having the potential for both positive and negative effects under each of these across the 21 SEA Objectives. The resulting 84 effects findings, across positive and negative construction and

operation effects, were reported separately to provide more clarity for decision making on the timing and nature of each of the effects identified.

5.5.6 The suite of wider environmental assessments (Figure 1.1), which form the sub-reports to this Environmental Report, undertaken as part of the rdWRMP24 process were also used to inform the SEA options assessment. These included HRA, WFD, BNG, NCA and INNS. Some of these assessments were the driver for the SEAs Objective's scoring, such as the INNS assessment, whereas others contributed alongside other considerations to determine the objective's scoring result, such as the HRA, WFD, NCA, and BNG assessments. Information about these additional assessments is further outlined in Chapter 4.

5.5.7 Assessments were undertaken on whole options i.e., all elements of an option that are dependent on each other, and not the individual parts. For example, the assessment of a reservoir option included the reservoir works themselves plus any works that are related to it such as transfers in/out and treatment.

5.5.8 Where there were several variations of an individual option, e.g., different transfer capacity, the assessment considered these variations and assessed them as part of the one whole option with the level of effect sought to ensure the predicted effects of the highest capacity were presented. Aspects of the option that may cause environmental harm were noted (e.g., if a particular variation might be more harmful).

5.5.9 The findings of the Level 1 options assessment were fed into the plan-making process and informed the development of Anglian Water's feasible options list and its reduction down to the constrained list used within modelling. The findings also informed option design, with some options modified as a result of the findings of this work (e.g. location of abstraction points, routing of transfer pipelines), in addition the mitigation identified was reviewed to ensure the option's costing information took account of the measures identified. Further details of the process of option development can be found in rdWRMP24's *Supply-side option development technical supporting document*.

5.5.10 The Level 1 environmental assessment from the SEA, NCA and BNG assessments also generated environmental metrics that formed part of the BVP metrics used within the WRMP24 modelling. Further details about these metrics are set out in Section 5.6, below.

5.5.11 See Appendix A for SEA matrices for each of the supply-side option assessments included in the BVP (Plan B) and alternative plans (Plans A, C and D).

Options Assessment (Level 2)

5.5.12 Where potential risks were identified in the HRA Test of Likely Significance (TOLS) process or the WFD Screening Exercise, the next stage HRA-Appropriate Assessment (AA) and WFD Level 2 – Detailed Impact Screening were undertaken. The AA process is a more in-depth assessment, requiring more specific information related to the design details of the proposed action (including mitigation) and details about the environmental features related to each NSN site included in its scope. At this strategic plan scale, only existing data related to the NSN sites was included and the design detail of options that underwent assessment was inevitably based on the information developed for the plan-making process, rather than the detailed information that would accompany the application for a project seeking development consent. The WFD Level 2 -Detailed Impact Screening comprises a detailed assessment carried out on the potential for impacts on each WFD quality element, from each activity proposed as part of the option. The findings of these assessments in relation to the BVP (Plan B), are presented in sub-report A – *Habitats Regulation Assessment and* sub-report B – *Water Framework Directive Assessment*.

Strategic Resource Options

Inputs from the Regional Plan

5.5.13 The rdWRMP24, alongside WRE's Regional Plan, includes SROs which are significant strategic options. The Anglian Water area includes SROs that have been selected in the associated Regional Plan, and therefore these SROs are expected to form part of the rdWRMP24 so they are also modelled and evaluated within the WRMP24 plan-making process. These are two new reservoirs: Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29). The environmental assessments undertaken for the SROs as part of the RAPID Gated Process, including separate SEA, HRA (Screening and Appropriate Assessment), WFD (Level 1 and Level 2) and INNS have been taken into account the Anglian Water rdWRMP24.

The RAPID Gated Process

5.5.14 The RAPID Gated Process relates to the funding of investigations and development of water resource solutions. There are four gates from feasibility to construction.

5.5.15 At each gate, companies submit information about their work on a solution, which is assessed to ensure companies are making progress on investigation and development of solutions. RAPID decides whether companies should continue to be allowed funding to further investigate and develop a solution to the next gate. The purpose of the gated process is to ensure at each gate that:

- companies are progressing strategic water resource solutions that have been allocated funding at Price Review 19 (PR19)
- costs incurred in doing so are efficient
- solutions merit continued investigation and development during the period 2020 to 2025

5.5.16 For Anglian Water's SROs, these were submitted for Gate 2 in November 2022. With progress currently being made on the Gate 3 deliverables.

SRO Size Variations

5.5.17 The two SRO reservoirs have been assessed at different capacities, with the findings having informed Anglian Water's decision making, and fed into the WRE plan-making process regarding the appropriate capacity of Anglian Water's SROs. Table 5.2: S outlines the difference in SEA findings for the different size variations. Note* comparisons below are given against the preferred option – included across rdWRMP24's Plans A, B, C and D, which in both cases is 50 Million Cubic Meters (MCM) useable volume. The reservoir size variations are made with the following assumptions:

- No change to abstraction location
- No change to footprint
- Change to embankment height relative to size

Table 5.2: SEA finding difference between SRO size variations

Option*	SEA Findings
Lincolnshire Reservoir 25MCM	The lower capacity Lincolnshire Reservoir will see reduced negative effects on Landscape as the embankment height required will be lower and therefore less visible. There will also be a reduction in the amount of material required for the embankment and therefore a reduced negative effect on material assets. **As this represents a small change to the SEA findings for one option, there is no overall change to significant effects predicted for the plan as a whole.**

Option*	SEA Findings
Lincolnshire Reservoir 75MCM	The higher capacity Lincolnshire Reservoir will see greater negative effects on Landscape as the embankment height required will be higher than the 50 Ml/d option and therefore more visible. There will also be a greater amount of material required for the embankment and therefore an increased negative effect on material assets. **As this represents a small change to the SEA findings for one option, there is no overall change to significant effects predicted for the plan as a whole.**
Lincolnshire Reservoir 100MCM	The higher capacity Lincolnshire Reservoir will see greater negative effects on Landscape as the embankment height required will be significantly higher than the 50 Ml/d option and therefore far more visible. There will also be a far greater amount of material required for the embankment and therefore an increased negative effect on material assets. **As this represents a small change to the SEA findings for one option, there is no overall change to significant effects predicted for the plan as a whole.**
Fenland Reservoir 25MCM	The lower capacity Fenland Reservoir will see reduced negative effects on Landscape as the embankment height required will be lower and therefore less visible within the low lying Fenland landscape. There will also be a reduction in the amount of material required for the embankment and therefore a reduced negative effect on material assets. **As this represents a small change to the SEA findings for one option, there is no overall change to significant effects predicted for the plan as a whole.**
Fenland Reservoir 75MCM	The higher capacity Fenland Reservoir will see greater negative effects on Landscape as the embankment height required will be higher than the 50 Ml/d option and therefore more visible, within the low lying Fenland landscape. There will also be a greater amount of material required for the embankment and therefore an increased negative effect on material assets. **As this represents a small change to the SEA findings for one option, there is no overall change to significant effects predicted for the plan as a whole.**
Fenland Reservoir 100MCM	The higher capacity Fenland Reservoir will see greater negative effects on Landscape as the embankment height required will be significantly higher than the 50 Ml/d option and therefore far more visible within the low lying Fenland landscape. There will also be a far greater amount of material required for the embankment and therefore an increased negative effect on material assets. **As this represents a small change to the SEA findings for one option, there is no overall change to significant effects predicted for the plan as a whole.**

5.6 Environmental metrics

5.6.1 The findings of the Level 1 environmental assessment, discussed in Section 5.5, generated environmental metrics that formed part of Anglian Water's BVP metrics. The BVP metrics, which also included cost and other data, played a key role in the modelling process across the decision making process to establish the supply demand forecasts and develop the four plan alternatives (Plans A, B, C and D), (see Section 5.7). The environmental assessment metrics were:

- Four metrics derived from the SEA- generated by assigning a score of 1 (minor), 4 (moderate) and 8 (major) to the effects identified to each SEA Objective from each option:
  - Positive construction
  - Negative construction
  - Positive operation
  - Negative operation

5.6.2 The metrics were based on the SEAs residual effects on the environment, assuming that recommended mitigation measures will be applied; this was considered to be appropriate as the

costs of delivering standard good practice mitigation were included in the costs of constrained list of supply options the model selects from.

5.6.3 Two metrics derived from the natural capital and ecosystem services assessments:

- Monetised Recreation and Amenity ecosystem services
- Other monetised Ecosystem Services (combining carbon sequestration, food production, air pollution, and natural hazard management)

5.6.4 Recreation and Amenity ecosystem services were separated from other ecosystem services to represent the social aspect of the BVP framework.

5.6.5 Biodiversity impact metrics were derived from application of the Biodiversity Net Gain 3.0 Metric (further details are provided in sub-report C – *Biodiversity Net Gain and Natural Capital Assessment*). Two metrics were developed and applied, which when combined provided an overall value for the estimated BNG Total Terrestrial units required to deliver 10% BNG. This estimate is based on the units required to achieve a 10% biodiversity net gain for each option according to the Biodiversity Metric, using the indicative BNG assessment. The two metrics were:

- **Unmitigated loss of habitat units**, a value generated where the strategic design of supply-side options indicated a loss of terrestrial habitat units compared to the baseline; resulting in a combined value of the total terrestrial habitat units for all selected options in a portfolio.
- **Estimated Net Gain in terrestrial habitat units over baseline after delivery**, an estimation – based on 10% of the baseline terrestrial habitat units – of the additional habitat units that would be required to deliver 10% net gain for all selected options in a portfolio.

5.6.6 It is noted that Anglian Water's BVP metrics also include consideration of climate change in the form of carbon emissions associated with supply options. This work sat outside the SEA process and assessed the impacts of supply-side options on carbon emissions using Anglian Water's internal cost modelling tool – C55. As the UK water sector moves towards defining a pathway to net zero by 2030, further supplementary analysis will be required to assess the scheduling of options relative to the strategy for decarbonisation (e.g., energy and offsets). This process is running in parallel to the SEA, looking to quantify and cost the impact and capex and carbon using the government Business, Energy and Industrial Strategy's most recent valuations.

5.6.7 These environmental assessment metrics are one group of metrics / considerations used in Best Value Plan Making.

5.7 Best Value Plan Making

5.7.1 Anglian Water's Decision Making Report technical supporting document – a supporting document of the rdWRMP24 – sets out the details of what a best value plan is and how a rdWRMP24 is developed. The process involves defining the scale of the problem – the factors that are expected to influence the balance of supply and demand for water in the plan area for the next 25 years. The process starts from the previous plan's assumptions and considers how changes in related factors need to be considered – anticipated changes in demand, climate change, licence capping, drought resilience, and environmental destination. This work leads to a future supply and demand forecast upon which modelling is undertaken to develop the draft Plan and its alternatives. This process starts with a least cost plan and alternatives are generated from this – as set out multiple Chapters – including *Modelling to develop plans* – in rdWRMP24's Decision Making Report technical supporting document.

5.7.2 In line with the Environment Agency's definition and WRPG (guidance), Anglian Water has taken a BVP approach to define their rdWRMP24. The BVP approach considered other factors

alongside economic cost to seek to achieve an outcome that increases the overall net benefit to customers, the wider environment and overall society, as set out in Figure 2.3.

5.7.3 The environmental assessment process contributed to the BVP approach under the BVP objective – Deliver long-term environmental improvements. The environmental assessment input to this process was included in the modelling process used to develop the draft BVP and its three alternatives. Part of this was delivered through the use of quantified environmental metrics described in Section 5.6, above and demonstrated within various Figures of the use of BVP metrics with rdWRMP24's Decision Making Report technical supporting document. In addition to the quantified metrics within the model and its outputs, discussion of key assessment findings and views expressed on these by environmental regulators, including: the Environment Agency and Natural England were also held as part of plan-making. The modelling process to develop plans incorporated eight metrics generated from across the environmental assessment process. These metrics enabled the environment to be directly considered in analysis of outputs during the plan making process. The result was the development of four alternative plans, these are:

- Plan A: Initial least cost plan based on the initial most likely scenario
- Plan B: Alternative plan based on preferred most likely scenario (rdWRMP24 Preferred Plan)
- Plan C: Least cost plan based on preferred most likely scenario
- Plan D: Least cost plan based on best for environment (abstraction) scenario

5.7.4 In addition to the inclusion of the above metrics in shaping the rdWRMP24 and its reasonable alternatives, environmental concerns raised by Natural England, Historic England and the Environment Agency were used to define supply-side options available for selection under the BVP. Consideration of the historic environment was also built-into the decision making, through the related SEA Objective. The wording of this objective was refined following feedback during the SEA scoping consultation, to help consider further historic environment receptors.

5.8 Stress and sensitivity tests

5.8.1 To ensure the rdWRMP24 (Plan B) and its alternatives (Plans A, C and D), as discussed above, are capable of meeting future uncertainties, the rdWRMP24 process is also required to conduct a range testing of the plans to future uncertainty. The detail of this process is presented in the Chapter of that name in rdWRMP24's Decision Making Report technical supporting document.

5.8.2 This is part of the rdWRMP24 modelling process and is designed to demonstrate to regulators – including Ofwat and the Environment Agency – that the alternative plans, assessed in this SEA, are robust to variations in the assumptions and options used within the modelling process. This uncertainty testing includes modelling to generate alternatives (MGA), sensitivity testing, stress testing and least worse regret analysis. The process is applied to enable comparison between the four alternative plans.

5.8.3 The various tests applied generate outputs that are intended to review whether the alternative plans presented in the rdWRMP24 (Plan A, C and D) are capable of addressing a wider range of futures, and to enable comparison of Plan A, B, C and D's performance. For example: Least worse regret analysis shows which plan and stress test scenario cause the worse regret and which the least worse regret. Each of the alternative plans (Plan A, B, C and D) is run for each stress test scenario to determine which investment portfolio has the most potential for 'regret' measured in overspend compared to the minimum cost for the scenario.

5.8.4 Each run generates an output indicating whether it can meet the supply and demand balance over the plan period and is used to consider whether the supply options included in rdWRMP24 alternative plans (Plans A, C and D) are robust. The model can run thousands of times generating different potential outputs, which are based on its response to the parameter/s that

have been amended; equally they can be used to review whether the plan alternative selected aligns with the next best outputs from the model – the latter is known as model generated alternatives (see of rdWRMP24 Decision Making Methods).

5.8.5 In some cases, Anglian Water's plan-making process, and the associated rdWRMP24 documents use the term alternatives to describe this testing process, and the outputs it generates. Such references, however, should not be confused with the concept of reasonable alternatives as set out in the SEA Regulations. This testing process – and its outputs – is a formal part of the modelling required in producing a robust rdWRMP24, with the process itself being applied to the four alternative plans (A, B, C and D). As might be expected to build due rigour into rdWRMP24's Plan alternatives, the testing can push the modelling to generate a solution to what may be considered an unreasonable context, such as an extreme future scenario. For example, one of the stress testing scenarios assumes higher than expected climate change and population growth, a move to the Enhance environmental destination scenario and lower advancement in demand management technology to test the four Plan alternatives.

5.8.6 However, as these tests are undertaken within Anglian Water's modelling system, the environmental assessment metrics (discussed above) related to the supply-side options are integrated within this part of the plan-making process. As such, information related to the performance of the environmental assessment's metrics was generated as part of model runs to test the plans for future uncertainty.

5.8.7 It is noted that during the development of the dWRMP24, the SEA framework was applied to a number of the outputs of the stress testing and sensitivity testing process. This led to the inclusion of related content being presented in the dWRMP24's main text and appendices. This activity was conducted as a good practice exercise alongside the dWRMP24's development. In the SEA work conducted to develop this rdWRMP24, the value of such additional analysis was reviewed and repeating its inclusion in the rdWRMP24's suite of environmental assessments was determined to be unnecessary as the focus of the rdWRMP24 is on reporting the findings of the Best Value Plan (and considering the alternative plans). As such, no equivalent content, or assessment matrices, are presented in this updated Environmental Report.

5.9 Summary

5.9.1 As has been summarised across the previous eight sub-sections the SEA and other environmental assessments have interacted with Anglian Water's WRMP24 plan making process from high level policy decisions, through metrics in modelling, to specific analysis of strategic designs of potential supply-side options. This influence can even be traced upward to interaction and coordination between Anglian Water's WRMP24 process and the regional planning level and flow of information between each in relation to option consideration and plan development mechanisms. The integration of the environment into the rdWRMP24 decision making has helped to identify poor performing options and identify the need for mitigation and consideration of associated costs. Environmental assessment of the different components of the emerging plan has helped to understand the drivers of environmental performance of the scenarios which underpin the BVP and alternative plans. The subsequent Chapters (6 and 7) apply the SEA framework to the BVP (Plan B) as a whole, followed by the same assessment for the three alternative plans (Plans A, C and D) to present the likely significant effects findings of the SEA process for rdWRMP24.

6 Assessment of Revised Draft WRMP24 – Best Value Plan

6.1 Introduction

6.1.1 This Chapter sets out the findings of the assessment of the Best Value Plan – Plan B – identifying the likely significant effects against each of the SEA objectives. Plan B is the complete rdWRMP24, the components that sit within it have contributed to the identification, description and evaluation of its likely significant effects which are outlined in Section 6.2, below, including the policy decisions, demand-management options and supply-side options. The significant effects reported here are based on assessment findings (identifying significant effects) in the SEA matrices for all these components, which can be found in Appendix A of this report.

6.2 The Best Value Plan

6.2.1 The development of Plan B (Best Value Plan) is discussed in rdWRMP24 itself and within its Decision Making Report technical supporting document. Plan B is based on the preferred most likely scenario. This scenario has been shaped by customer and stakeholder engagement.

6.2.2 The policy decisions (demand management, timing of licence capping), that contribute to the supply and demand forecast – discussed in Section 5.2 and, the start of Section 5.3 above–- that are included within Plan B are:

- Environmental destination and ambition: achieving BAU+ environmental destination starting in 2036 and profiled over time by prioritising the most sensitive areas in the Anglian Water region, with delivery completed in 2040. This approach enables the latter part of Plan B's delivery to be adaptable based on the outcome of the AMP8 WINEP investigations.
- 1 in 500 year drought resilience is achieved by 2040, a delay of one year beyond target delivery, as earlier surplus is used in the early delivery of BAU+, as above.
- Demand management applies the Aspirational portfolio.
- The timing of licence capping – scenario 8 is delivered, which means in the WRMP24 period existing public water supply licences that are time limited are capped at recent actual average in 2030, with Anglian Water's permanent licences being capped in a phased approach between 2030 and 2036.

6.2.3 In addition, it should be noted that the programme of river support and restoration projects identified by the separate WINEP process for AMP8 (known as WINEP options) are the same in Plan B and all the alternative plans and are included in its assessment.

6.2.4 Plan B consists of 50 supply-side options, 5 WINEP options and an Aspirational demand management strategy. The supply-side options selected in Plan B are set out in Table 6.3 below.

Table 6.3: Plan B Supply-side options

Ref	Description	Operation Date
CAM4	Ruthamford South to Cambridge Water potable transfer (50 Ml/d)	2030
LNC25	Lincolnshire East to Lincolnshire Central potable transfer (29 Ml/d)	2030
EXC3	Essex South to Essex Central potable transfer (10 Ml/d)	2030
EXC7	Backwash water recovery, Essex Central WTW (0.3 Ml/d)	2030
FND26	Backwash water recovery, Fenland WTW (0.2 Ml/d)	2030
FND22	Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039)	2030
LNC30	Lincolnshire Central WTW Upgrade (3.2 Ml/d)	2030
LNE11	Lincolnshire East Groundwater (7.5 Ml/d)	2030
LNE12	Lincolnshire East Surface Water enhancement (13 Ml/d before 2039, 7.3 Ml/d after 2039)	2030
LNN3	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72 Ml/d)	2030
NAY1	Norwich and the Broads to Aylsham potable transfer (3 Ml/d)	2030
NBR6	Fenland to Norfolk Bradenham potable transfer (50 Ml/d)	2030
NEH3	Suffolk Thetford to Norfolk East Harling potable transfer (5 Ml/d)	2030
NHL4	Norfolk East Harling to Norfolk Harleston potable transfer (5 Ml/d)	2030
NTB10	Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	2030
RTS16	Ruthamford South Drought permit (2.07 Ml/d)	2030
RTS21	Ruthamford South surface water enhancement (9.5 Ml/d up to 2040, 6 Ml/d after 2040)	2030
SUE23	Suffolk East WTW Upgrade (1.7 Ml/d)	2030
SUE24	Suffolk Sudbury to East Suffolk potable transfer (10 Ml/d)	2030
SUT6	Backwash water recovery, Suffolk East WTW (0.05Ml/d)	2030
SWC8	Cambridge to Suffolk West Cambs potable transfer (50 Ml/d)	2030
SWC13	Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	2030
EXS7	Backwash water recovery, Essex South WTW (0.3 Ml/d)	2030
NBR9	Backwash water recovery, Norfolk Bradenham WTW (0.2 Ml/d)	2030
NNC5	North Norfolk Coast WTW backwash water recovery (0.18 Ml/d)	2030
NNC6	North Norfolk Coast WTW backwash water recovery (0.2 Ml/d)	2030
LNE3	Backwash water recovery, Lincolnshire East WTW (1.3 Ml/d)	2030
NAY4	Backwash water recovery, Norfolk Aylsham WTW (0.75 Ml/d)	2030

Ref	Description	Operation Date
NED3	Backwash water recovery, Norfolk East Dereham WTW (0.1 Ml/d)	2030
NHL7	Backwash water recovery, Norfolk Harleston WTW (0.2 Ml/d)	2030
NAY5	Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	2030
EXS19	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039)	2032
SUT5	Norfolk Bradenham to Suffolk Thetford potable transfer (15 Ml/d)	2032
SUE25	Backwash water recovery, Suffolk East WTW (0.17 Ml/d)	2034
LNN1	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3 Ml/d)	2035
NED2	Norfolk Bradenham to Norfolk East Dereham potable transfer (10 Ml/d)	2035
NNC4	Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	2035
SHB9	South Humber Bank Non-potable desalination (60 Ml/d)	2036
FND29	Fens Reservoir 50MCM (usable volume) (44.4 Ml/d)	2036
EXS10	Holland on Sea desalination (seawater) (26 Ml/d)	2040
LNB1	Ruthamford North to Bourne potable transfer (20 Ml/d)	2040
LNC16	Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d)	2040
LNC28	Bulk trade agreement–- River Trent (7 Ml/d)	2040
LNE6	Mablethorpe desalination Seawater (50 Ml/d)	2040
NTB17	Bacton desalination (seawater) (25 Ml/d)	2040
NWY1	Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	2040
RTN30	Lincolnshire Central to Ruthamford North potable transfer (75 Ml/d)	2040
RTS24	Ruthamford North to Ruthamford South potable transfer (75 Ml/d)	2040
RTN17	Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d)	2040
RTC3	Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	2042

6.3 SEA Findings – Plan B (Best Value Plan)

6.3.1 The SEA's assessment of likely significant effects of rdWRMP24 relates to the environmental consequences (positive or negative) in relation to each SEA Objective. This Section presents the SEA's likely significant effects findings of Plan B against each of the SEA Objectives. The methodology applied in undertaking the assessment is set out in Chapter 4: Environmental Assessment Methodology, including Topics, SEA Objectives, and assessment questions – used as a prompt to consider relevant issues in relation to each objective. Where the findings of an SEA Objective are influenced by the findings of other environmental assessments as set out in sub-reports (e.g. Habitats regulation assessment, Water framework directive assessment, etc.) these are referred to in the findings presented below.

6.3.2 The significant effects reported here are residual effects, meaning that the mitigation measures identified in the 'mitigation' column of the assessment matrices of each component (see Appendix A) have been applied, as have mitigation measures identified in the sub-reports. It is noted that the Level 2 assessments – HRA Appropriate Assessment and WFD Level 2 assessment – within sub-report A – *Habitats Regulation Assessment,* and sub-report B – *Water Framework Directive Assessment* respectively, for specific supply-side options can contain additional description of mitigation relevant to the focus of those assessments, which can be found in the relevant Chapters of those documents. Further description of mitigation/ enhancement measures that have been considered are provided within Chapter 9: Mitigation Measures and Enhancement Opportunities. Due to the above, this information has not been replicated again here. In a small number of cases, however, additional mitigation is presented in the description of Plan B's likely significant effects findings. This is mitigation that is considered to result from corporate initiatives across Anglian Water (i.e. Net Zero and Biodiversity Net Gain strategies), rather than to emerge from within the mitigation linked to the assessment of specific components within Plan B. Where this is the case, the additional mitigation is clearly highlighted and its predicted influence on Plan B's likely significant effects to the relevant SEA objective are described.

6.3.3 Figure 6.1 presents the SEA findings of Plan B. The top of Figure 6.1 presents the overall assessment rating for each SEA objective as a result of Plan B's construction and operation. These ratings were concluded using the SEA Framework set out in Section 4.2, other environmental assessments set out in Section 4.3 (WFD, HRA, NCA, BNG, INNS) alongside professional judgement. The key – explaining the colour coding – helps to indicate where likely significant effects are predicted to result from Plan B and is set out in Table 6.4.The remainder of the figure portrays the contributing components to Plan B, these are the specific assessment results for the components of the rdWRMP24 that contribute to the delivery of the supply-demand balance across the 25 year planning period (2025-2050). The individual findings for each of the components of the rdWRMP24 can be found in Appendix A (SEA Options Assessment). The assessment findings for all components of Plan B (presented down the length of Figure 6.1) were reviewed and taken into account in identifying, describing and evaluating the likely significant effects of Plan B, as presented at the top of Figure 6.1 and discussed for each SEA objective, below.

Table 6.4: Key to SEA Findings

Colour Code	Effect
+++	Major Positive
++	Moderate Positive
+	Minor Positive
0	Neutral
-	Minor Negative
--	Moderate Negative
---	Major Negative

6.3.4 Assessment findings for alternative plans (Plans A, C and D) are set out in Chapter 7.

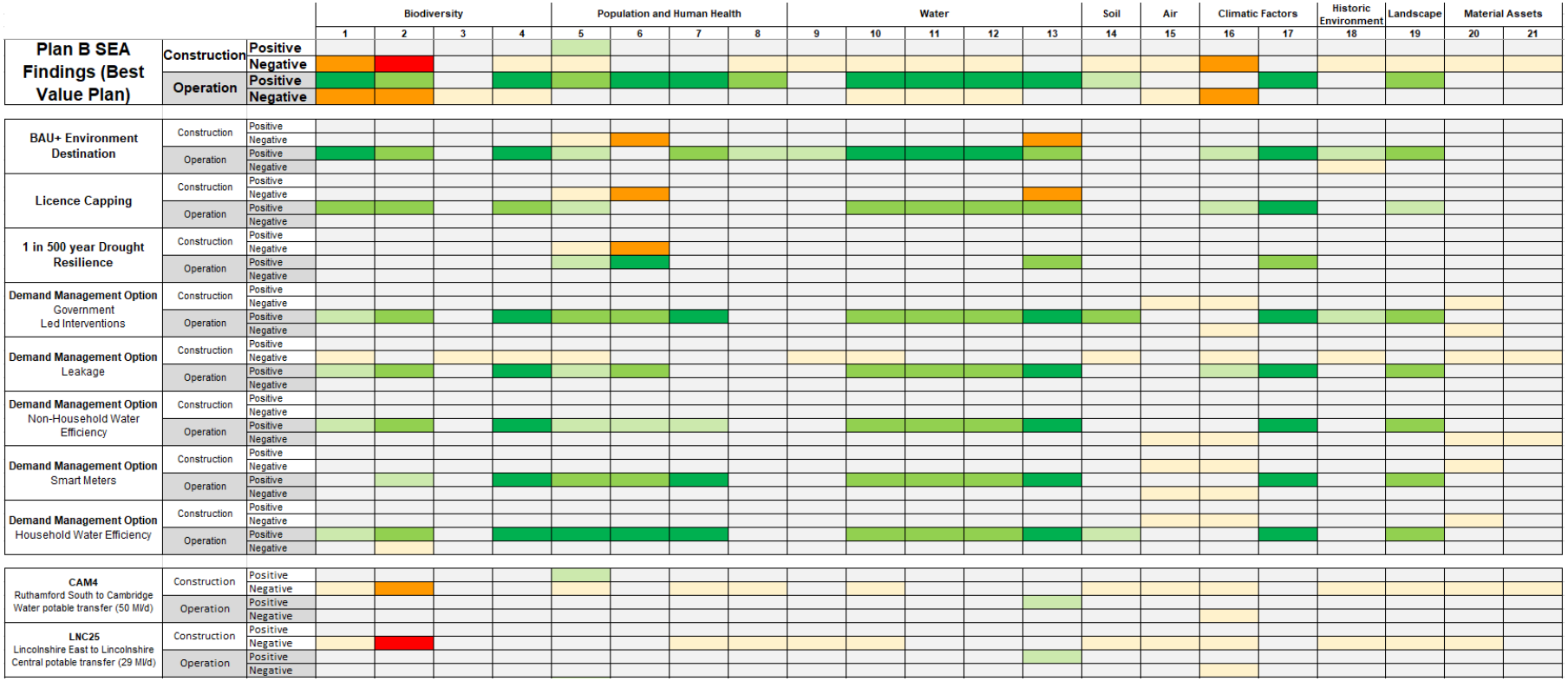
6.3.5 The assessment of Plan B, and the alternative plans (A, C and D) is structured to indicate the findings of the 21 individual SEA Objectives for the plans overall and is displayed as:

- First Column: Positive Construction Findings
- Second Column: Negative Construction Findings

- Third Column: Positive Operational Findings
- Fourth Column: Negative Operational Findings

6.3.6 This is displayed within Sections 6.3, 7.3, 7.4 and 7.5.

Figure 6.1: Plan B SEA Findings Matrix



			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
EXC3 Essex South to Essex Central potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXC7 Backwash water recovery, Essex Central WTW (0.3 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND26 Backwash water recovery, Fenland WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND22 Marham abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC30 Lincolnshire Central WTW Upgrade (3.2 Mld/)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE11 Lincolnshire East Groundwater (7.5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE12 Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNN3 Lincolnshire Retford and Gainsborough WTW Upgrade (0.72 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NAY1 Norwich and the Broads to Aylsham potable transfer (3 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR6 Fenland to Norfolk Bradenham potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NEH3 Suffolk Thetford to Norfolk East Harling potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NHL4 Norfolk East Harling to Norfolk Harleston potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NTB10 Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS16 Ruthamford South Drought permit (2.07Ml/d) (Winter)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS21 Ruthamford South surface water enhancement (9.5 Ml/d up to 2040, 6 Ml/d after 2040)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE23 Suffolk East WTW Upgrade (1.7 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE24 Suffolk Sudbury to East Suffolk potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT6 Backwash water recovery, Suffolk East WTW (0.05 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC8 Cambridge to Suffolk West Cambs potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC13 Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS7 Backwash water recovery, Essex South WTW (0.3Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR9 Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC5 North Norfolk Coast WTW backwash water recovery (0.18 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NNC6 North Norfolk Coast WTW backwash water recoveryy (0.2 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE3 Backwash water recovery, Lincolnshire East WTW (1.3 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NAY4 Backwash water recovery, Norfolk Aylsham WTW (0.75 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NED3 Backwash water recovery, Norfolk East Dereham WTW (0.1 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NHL7 Backwash water recovery, Norfolk Harleston WTW (0.2 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NAY5 Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS19 Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT5 Norfolk Bradenham to Suffolk Thetford potable transfer (15 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE25 Backwash water recovery, Suffolk East WTW (0.17 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNN1 Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3.5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NED2 Norfolk Bradenham to Norfolk East Dereham potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NNC4 Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SHB9 South Humber Bank non-potable desalination (60 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND29 Fens Reservoir 50MCM (usable volume) (44.4Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS10 Holland on Sea desalination (seawater) (25 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNB1 Ruthamford North to Bourne potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC16 Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC28 Bulk trade agreement - River Trent (7 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE6 Mablethorpe desalination Seawater (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NTB17 Bacton desalination (seawater) (25 Ml/d).	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NWY1 Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN30 Lincolnshire Central to Ruthamford North potable transfer (75 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
RTS24 Ruthamford North to Ruthamford South potable transfer (75 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN17 Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTC3 Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
BRETT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
COLNE	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
GIPPING	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
PANT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
STIFFKEY	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

SEA Objective 1 - To protect designated sites and their qualifying features

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Major Positive Effects	Moderate Negative Effects

6.3.7 The rdWRMP24 is underpinned by the environmental destination that protects the environment, including biodiversity, from being degraded by driving reductions in existing public water supply abstraction. Plan B sets an environmental destination scenario of BAU+, which includes additional Anglian Water abstraction reductions helping to deliver protection to NSN sites protected under the Habitats Regulations.

6.3.8 The assessment findings for Plan B have been informed by sub-report A – *Habitats Regulation Assessment*, which can be cross referenced by the reader for further details on its findings. Its findings indicate that overall Plan B, having examined all the potential construction and operational effects in light of the individual Habitats Site's conservation objectives and at this stage (the plan making stage) taking a precautionary approach to the assessment. It can be concluded that this element of the rdWRMP24 would not give rise to adverse effects on the integrity of individual habitats sites within Plan B, as assessed against the conservation objectives.

6.3.9 In addition to the findings from the HRA the individual SEA findings for each of the supply-side options assess the effects on other designated sites not included in the HRA, for example, Sites of Special Scientific Interest (SSSIs), Marine Conservation Zones (MCZ) and Marine Protected Areas (MPA).

6.3.10 All of the options within Plan B rule out risks of effects on integrity to such designated habitats sites based on information available at this strategic plan-making stage. The findings presented in the rdWRMP24's sub-report A – *Habitats Regulation Assessment* are the key drivers behind the moderate negative operational effects identified here.

6.3.11 While it is accepted that further information and study is required to inform a re-assessment at the detailed project stage, it is anticipated that this additional information will allow a conclusion that in assessing the detailed design proposals (at the appropriate time), would not result in an adverse effect on the integrity of individual habitats sites.

6.3.12 No likely significant positive effects have been identified for the construction stage.

6.3.13 **Significant (moderate) negative effects** are identified for the construction stage overall. This is driven by the potential impacts associated with construction of desalination options. Holland on Sea desalination (seawater) (26 Ml/d) EXS10) option is identified as a significant (moderate) negative effect during the construction stage due to the option intersecting Holland Haven Marshes SSSI and Outer Thames Estuary MPA. Bacton desalination (seawater) (25 Ml/d) (NTB17) also identified significant (moderate) negative effects during the construction stage. This is driven by the option directly intersecting Cromer Shoal Chalk Beds MCZ with effects upon habitats and Lion Wood Local Nature Reserve.

6.3.14 **Significant (major) positive effects** in the operational phase are derived from the reduction and removal of existing Anglian Water abstraction licences during the plan period. The first element of the reduction is delivering sustainability reductions through licence capping of existing abstractions (to recent actual) between 2030-36. A second, more substantive round of reduction in existing public water supply within Plan B – delivering approximately 180 Ml/d of water back to the environment in terms of surface water and groundwater across the supply area – results from the delivery of BAU+ in 2040. In total, after 15 years into the plan period, Plan B will see Anglian Water's existing abstractions reduce by over 200 Ml/d of water from current sources. This water will instead remain available to the environment and will support a wide range of habitats and species. The exact location and specific designated sites that will

benefit from this additional available water is not known at this time. The intention of the BAU+ environmental destination scenario, beyond the BAU scenario, is to return water that has benefits related to NSN sites, that may be currently affected by limitations on the amount of water available in the environment. The detail and location of these significant positive operational effects will become far better understood as a result of WINEP investigations related to environmental destination, which form part of Plan B's content. These WINEP investigations will be completed in the first five years of the plan, with the results used to inform the next cycle of water resource planning in 2029.

6.3.15 **Significant (moderate) negative effects,** in the operational phase, are associated with new supply-side options. As a result of reductions in available public water supply, which drive the positive significant operational effects to this SEA objective – and to meet growing demand and climate change – Plan B includes new supply-side options, some of which have environmental consequences. The significant (moderate) negative effects are driven by the potential impacts associated with the operation of desalination options. Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) is identified due to direct intersect with Holland and Haven Marshes SSSI and Outer Thames Estuary MPA.

SEA Objective 2 - To deliver BNG, protect biodiversity, priority species and vulnerable habitats such as chalk rivers

Construction Effects		Operational Effects	
Neutral	Major Negative Effects	Moderate Positive Effects	Moderate Negative Effects

6.3.16 Plan B aims to support a flourishing environment. The Environment Act's for Biodiversity Net Gain (BNG) requirements will be mandatory for all qualifying development by the time the options within the rdWRMP24 comes into effect. This will mean that all qualifying development implemented by Anglian Water related to rdWRMP24's delivery will need to deliver a minimum of 10% BNG. Overall Plan B is predicted to generate a net gain on biodiversity by increasing habitat units across the region against the baseline, the detailed findings are presented in rdWRMP24 sub-report C – *Biodiversity Net Gain and Natural Capital Assessment*.

6.3.17 At this early strategic stage of plan-making the majority of the options available on Anglian Water's constrained list have been identified as having the potential to lead to on-site losses, this includes many of the individual options within Plan B. However, as highlighted in the sub-report referenced above, the application of net gain principles in future project design and consenting combined with Anglian Water's developing corporate BNG strategy, see below, give confidence that at least a 10% net gain in habitat units will be achieved through the implementation of rdWRMP24.

6.3.18 The delivery of environmental destination (BAU+) and licence capping in Plan B are expected to facilitate the reduction of abstractions of water from environmentally sensitive areas, such as chalk streams in Cambridgeshire, which provides opportunities for restoration of ecological health.

6.3.19 No significant positive effects are identified at the construction stage.

6.3.20 **Significant (major) negative effects** are identified for the construction stage for this SEA objective. This effect is driven by the construction of some desalination options, for example, Mablethorpe desalination Seawater (LNE6) and South Humber Bank desalination (Non-potable) (SHB9). The drivers of significant effect for Mablethorpe desalination Seawater (50 Ml/d) (LNE6) and South Humber Bank Non-potable desalination (60 Ml/d) (SHB9) are the potential permanent loss of woodland and priority habitat, the option intersects Saltfleetby – Theddlethorpe Dunes groundwater terrestrial dependent ecosystem (GWDTE), and the pipeline intersects with Burlands Beck chalk stream. Construction of the two reservoirs will lead to localised losses of BNG units, with Fens Reservoir 50MCM (usable volume) (44.4 Ml/d)

(FND29) unmitigated loss of approximately 30% and Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) unmitigated loss of approximately 24% (further information can be found in Appendix C). At this stage of the assessment the BNG ratings for individual options are unmitigated. These results are based on conceptual designs and locations for the options, and within this context identifies some locations where on-site BNG would be difficult to deliver. Where localised losses do occur and biodiversity gain is still required, delivery and integration of Local Nature Recovery Strategies can be used to boost overall biodiversity gains.

6.3.21 **Significant (moderate) positive effects** are identified at the operational stage. This effect is driven by the measures to retain water in the environment (i.e. environmental destination (BAU+) and licence capping), complemented by demand management options. Protecting the environment – water bodies and designated sites – will support those priority species and vulnerable habitats that rely on these features. Further to this, Plan B overall delivers an approximate increase of 7% in terrestrial habitat units over the baseline, this is driven by the benefits of Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) (see Appendix C) and The Biodiversity Roadmap, set out in Section 4.4 of the rdWRMP24 sub-report C – *Biodiversity Net Gain and Natural Capital Assessment* provides a clear basis for Plan A to contribute to Anglian Water's developing Corporate Strategy on BNG.

6.3.22 **Significant (moderate) negative effects** are identified at the operational stage. This effect is driven by a combination of an approximate unmitigated 13% fall in river habitat units for Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) and the unmitigated negative effects of the desalination options, noted above, and options associated with water treatment work upgrades including: Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039) (FND22); increase in daily abstraction volume from licences on Lincolnshire East Groundwater (7.5 Ml/d) (LNE11); and Ruthamford South surface water enhancement (9.5 Ml/d up to 2040, 6 Ml/d after 2040) (RTS21). Significant (moderate) negative effects are also identified with Plan B's water reuse scheme (Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19)). Further to this significant (moderate) negative effects are identified for Lincolnshire East Groundwater (7.5 Ml/d) (LNE11) due to the increased abstraction from the chalk aquifer of North Beck Drain. The dependent surface water body is identified due to the increase in groundwater abstraction from various groundwater sources.

6.3.23 **Additional mitigation**: The Biodiversity Roadmap, set out in Section 4.4 of the rdWRMP24 sub-report C – *Biodiversity Net Gain and Natural Capital Assessment* provides a clear basis for Plan B to contribute to Anglian Water's developing Corporate Strategy on BNG. It is clear that the development of this corporate strategy, provides the basis to help avoid, and where practicable, reduce the loss of habitat in Plan B's implementation, and to respond to any remaining on-site losses with the delivery of BNG in the local area, or at strategic sites. **The outcome of which has the potential to remove Plan B's significant negative operational effect and result in a minor rating for the Plan's operational negative findings.**

SEA Objective 3 - To avoid spreading and, where required, manage invasive and non-native species (INNS)

Construction Effects		Operational Effects	
Neutral	**Neutral**	**Neutral**	**Minor Negative Effects**

6.3.24 No significant effects (positive and negative) have been identified for the construction stage. No significant positive effects have been identified for the operational stage.

6.3.25 No significant negative effects have been identified for the operational stage; with Plan B concluding a minor negative operational effect identified relating to the findings of the INNS Level 2 assessment required for nine of Plan B's 50 supply-side options. Further details of the

assessment on INNS are set out in the rdWRMP24's sub-report D – *Invasive Non-Native Species Risk Assessment*.

6.3.26 Sub-report D – *Invasive Non-Native Species Risk Assessment,* identified that INNS spread risk was greatest for the new reservoirs and their associated water transfers (Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) and Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17)), and the transfer of raw water to desalination plants. The greater level of risk presented by these two options is not considered to lead to significant effects at the plan level of the plan as a whole.

6.3.27 All options that are taken forward within Plan B that have an INNS risk will incorporate best practice mitigation measures including information on biodiversity security. Construction stage risks are best evaluated and mitigated on a case-by-case basis at a more advanced stage in option design and implementation.

SEA Objective 4 – To meet WFD objectives relating to biodiversity

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Major Positive Effects**	**Minor Negative Effects**

6.3.28 Plan B has been assessed against SEA Objective 4 to understand its positive and negative effects in relation to the biodiversity goals of the Water Framework Directive (WFD), as set out within the water body objectives defined in the River Basin Management Plans relevant to the region. Plan B's findings in relation to this objective are supported by the assessments reported in the rdWRMP24's WFD assessment report.

6.3.29 No significant positive effects for the construction stage have been identified.

6.3.30 No significant negative effects for the construction stage have been identified, giving a minor negative rating.

6.3.31 **Significant (major) positive effects** are identified for Plan B in its operational phase. The delivery of BAU+ environmental destination in 2040 will help achieve flows to support 'Good Ecological Status' under the WFD. This results from the BAU+ scenario returning approximately 240 Ml/d of existing water used to supply the public to the environment. The earlier (2030 – 2036) phased delivery of licence capping will also contribute to this significant beneficial effect by capping permanent licences at their recent actual usage, meaning abstraction rates cannot be raised in the future, which could otherwise risk a deterioration of surface and groundwater's existing WFD status. Further, demand management options also contribute to this major positive significant effect. The introduction of increased water efficiency through government led interventions, water efficiency for households and non-households will reduce the demand for water during the plan period. This leads to major positive significant effects during the operational phase by ensuring the resilience of water supplies is maintained in the short and medium-term, whilst reducing abstractions and leading to the BAU+ environmental destination outcomes.

6.3.32 No significant negative effects for the operational stage identified for Plan B overall.

6.3.33 The WFD assessment concluded that in Plan B there were no options identified with risk of non-compliance with WFD.

SEA Objective 5 - To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing

Construction Effects		Operational Effects	
Minor Positive Effects	**Minor Negative Effects**	**Moderate Positive Effects**	**Neutral**

6.3.34 No significant effects are identified at the construction stage. Some localised temporary negative effects may occur through disturbance to communities where large construction projects are planned. These projects may also bring some localised positive effects. These positive effects mainly occur as a result of construction of the larger supply-side options (e.g. desalination, reservoir and wastewater treatment work upgrades), where the potential for job creation and supply chain benefits are expected to benefit the local economy.

6.3.35 **Significant (moderate) positive effects** are identified as Plan B is implemented (i.e. through the operation stage). Plan B as a whole provides sufficient water to maintain the health and wellbeing of communities; both the current population and predicted new residential and commercial development. It is anticipated that new reservoirs (e.g. Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17)) will provide benefits to local communities. In creating a new community facility (in addition to a water supply function), the reservoirs are anticipated to provide permanent jobs, new destinations for the surrounding communities and an opportunity for people to access green/blue space, which will contribute toward health and wellbeing. Economic development will be facilitated through Plan B. Job creation and supply chain benefits are likely to accrue through the delivery of a number of large infrastructure projects (e.g. supply-side options).

6.3.36 Demand management options are intended to lead to increased awareness of water efficiency ratings, as well as water saving measures. Mandatory legislation regulating the water-efficient products that are on the market (the Government led interventions DM option) will encourage consumers to understand the benefits and facilitate behaviour shifts that should translate into everyday practice within homes and businesses. Smart metering will assist communities in managing their personal water use with the intention of improving household water efficiency. Complementary to this, proposals for customers to be billed on their actual usage (or an estimate of this) is expected to assist customers in managing their water use and finances. Plan B aims to minimise unnecessary bill increases by delaying investment in high operational cost options.

6.3.37 No significant negative effects are identified at the operational stage, giving a neutral rating.

SEA Objective 6 - To secure resilient water supplies for the health and wellbeing of customers

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

6.3.38 Securing resilient water supplies for customers lies at the heart of Anglian Water's duties as a water supply company. Achieving a balance of supply to meet demand for public water supply across the plan area throughout the period 2025-2050 is a statutory requirement of the rdWRMP24 process.

6.3.39 No significant effects are identified during the construction stage overall, giving a neutral rating.

6.3.40 There are components of Plan B that reduce the amount of public water supplies available to Anglian Water and its customers during the rdWRMP24 period. These are the reduction and cessation of existing public water supply abstractions from surface and groundwater relating to both the delivery of licence capping, phased from 2030 to 2036, and the delivery of the BAU+ environmental destination fully delivered by 2040. Individually these components of Plan B are found to lead to moderate negative significant effects on the ability to provide resilient water supplies to customers. However, the overall assessment of Plan B recognises that additional new supply options are delivered, including both reservoir options Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) and Lincolnshire Reservoir 50MCM (usable volume) (169

Ml/d) (RTN17) and three of the desalination projects Holland on Sea desalination (seawater) (26 Ml/d) (seawater) (EXS10), Mablethorpe desalination Seawater (50 Ml/d) (LNE6) and Bacton desalination (seawater) (25 Ml/d) (NTB17) which maintain the supply-demand balance. On balance, negative construction effects to this SEA Objective from Plan B are considered to be minor.

6.3.41 **Significant (major) positive effects** are identified during the operational stage. The supply-side options that help provide and distribute the 'new water', for example reservoirs and transfers, are identified as having a significant (moderate) positive effect once they are operational due to their role in securing resilient replacement supplies that maintain the supply demand balance. This is complemented by the benefits delivered by the demand management options, which are aimed at increasing the amount of water available for customers and deliver significant (moderate) positive effects. The delivery of 1 in 500 year drought resilience to Anglian Water's water supply system in 2040 also contributes another major facet to the significant positive effects of Plan B during its operational stage.

6.3.42 No significant negative effects are identified at the operational stage.

SEA Objective 7 - To increase access and connect customers to the natural environment, provide education or information resources for the public

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

6.3.43 The rdWRMP24 process aims to deliver long-term environmental improvements. This focuses on maintaining water within the natural environment which will benefit water bodies, designated habitats and their ecosystems. In addition to benefitting biodiversity, many of these habitats and landscapes are publicly accessible and therefore Plan B is likely to deliver benefits to those that live, work, and visit the region.

6.3.44 No significant positive or negative effects have been identified at the construction stage.

6.3.45 **Significant (major) positive effects** are identified during the operational stage. The most direct of these significant effects is the anticipated benefits from the two reservoir supply-side options (i.e. Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29)). While the details of what form these benefits will take will be developed as the projects progress, there are opportunities for the reservoirs to be new destinations for people to connect to the natural environment. The reservoirs could form country parks, with footpaths, walkways, and cycle paths. There is also the opportunity for increasing connectivity to the reservoirs, for example, through amending existing footpath routes connecting to the local area or improving public transport options. Similar reservoir sites operated by Anglian Water include areas such as visitor centres as well as hosting visits from local schools or sports clubs. Connecting to blue/green infrastructure like reservoirs can help to improve mental and physical wellbeing.

6.3.46 Demand management measures are also expected to provide additional information resources for the public on water use. Through the use of smart meters and smart homes, customers will be able to access their water usage on a daily basis through a web portal or mobile application. These routes provide communication channels to engage with customers on their water usage and water efficiency, with up-to-date information to promote behavioural change.

6.3.47 No significant negative effects have been identified at the operational stage, giving a neutral rating.

SEA Objective 8 – To maintain and enhance tourism and recreation

Construction Effects	Operational Effects

Neutral	**Minor Negative Effects**	**Moderate Positive Effects**	**Neutral**

6.3.48 Overall Plan B is considered to have no significant effects to this SEA Objective during construction, with the positive effect finding rated as neutral. The minor negative effects identified during construction relate to temporary effects linked to supply-side options. The construction of new supply-side infrastructure – e.g. transfer pipelines and desalination plants – will result in temporary local disturbance to recreational resources such as footpaths and cycle routes, where these are diverted.

6.3.49 **Significant (moderate) positive effects** are identified during operation. This is driven by the anticipated benefits from the two reservoir supply-side options (Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29)). While the details of what form these benefits will be developed as the projects progress, there are opportunities for the reservoirs to be new tourist destinations, providing recreational opportunities for local people and thousands of visitors. New walking routes around the reservoirs and walking and cycling routes connecting the reservoirs to local networks are anticipated to enhance recreation opportunities for local people and visitors.

6.3.50 Creating new tourism destinations is expected to complement the local tourism industry across nearby towns by adding to the list of local attractions. This is likely to have benefits for the local economy with opportunities, such as supply chain and for local businesses and employment opportunities.

6.3.51 Similar reservoir sites operated by Anglian Water include areas such as visitor centres to support recreation activities, related to the reservoir (e.g. water sports) and surroundings (e.g. bike hire), providing facilities for visitors and local sports clubs.

6.3.52 No significant negative effects have been identified at the operational stage.

SEA Objective 9 – To reduce or manage flood risk, taking climate change into account

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

6.3.53 No significant positive effects are identified during the construction stage for Plan B overall, giving a neutral rating. Minor negative effects have been identified due to specific supply-side options generating localised significant (major and moderate) negative effects during construction due to options being located within Flood Zone 2 and/or 3; including the desalination options Mablethorpe desalination Seawater (50 Ml/d) (LNE6) and Bacton desalination (seawater) (25 Ml/d) (NTB17), plus Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29). Residual localised flood risk vulnerability is possible, however, overall there are no significant effects identified for Plan B.

6.3.54 No significant effects are identified during the operational stage for Plan B overall, giving neutral ratings. Localised (moderate) negative effects have been identified due to the potential future flood risk effects on the location of options (Mablethorpe desalination Seawater (50 Ml/d) (LNE6) and Bacton desalination (seawater) (25 Ml/d) (NTB17)), with increased flood risk management measures needed to ensure the continuation of operation. The phasing of these supply-side options reduces the potential impact of this effect, with a longer planning period allowing for the refinement of location and implementation of further flood risk management measures, if required.

SEA Objective 10 - To enhance or maintain surface water quality, flows and quantity

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Major Positive Effects**	**Minor Negative Effects**

6.3.55 Provision of a secure water supply is a key objective of rdWRMP24, with Plan B delivering the BAU+ environmental destination scenario increasing surface water availability through reductions in existing public water supply abstractions. The BAU+ scenario aims to achieve flows to support 'Good Ecological Status' under the WFD, improving the quality of surface waters within the Anglian region.

6.3.56 No significant positive effects are identified for the construction stage.

6.3.57 **Significant (major) positive effects** in operation are identified as Plan B will generate 240Ml/d through delivery of BAU+ returning this water, currently used as public water supply, back to the environment by 2030. Returns of surface water to the environment at this stage are not currently known, this will be confirmed through the WINEP investigations as part of Plan B, and will be completed in the initial years of the plan implementation to inform the development of rdWRMP24, the next iteration of Anglian Water's water resource plan-making, WRMP29.

6.3.58 No significant negative effects for the operational stage identified for Plan B overall.

6.3.59 The WFD assessment concluded that in Plan B there were no options identified with risk of non-compliance with WFD.

SEA Objective 11 – To enhance or maintain groundwater quality and resources

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

6.3.60 The rdWRMP24 key objectives include the delivery of long-term environmental improvements to create a flourishing environment whilst adapting to a changing climate with increasing resilience demands. A key challenge faced is the changing climate resulting in less opportunities for groundwater replenishment and overall river catchments and ultimately the amount of water available. With this, Plan B aims to; meet the needs of stakeholders, recognise that abstraction must be environmentally sustainable, and reflect key ambitions to achieve a flourishing environment and Anglian Water's commitment to protecting and enhancing the natural environment.

6.3.61 No significant effects are identified for the construction stage.

6.3.62 **Significant (major) positive effects** are identified during the operational stage. These findings are driven by significant reductions of Anglian Water's existing public water supply abstractions through the middle period of the plan's implementation, between 2030 and 2040. These reductions in available public water abstraction are generated by the implementation of licence capping, followed by the delivery of the BAU+ environmental destination, both of which will include considerable reductions to abstractions from groundwater sources, which will benefit these water bodies and those that are connected to them. The delivery of all five demand management options, which make up the Aspirational demand management portfolio, also contribute to this positive effect by reducing demand against the current baseline by over 221.8 Ml/d by 2050. This effectively acts to ensure population growth in Anglian Water's supply area during the plan period does not generate increased demand on the region's groundwater resources.

6.3.63 No significant negative effects for the operational stage identified for Plan B overall.

6.3.64 The WFD assessment concluded that in Plan B there were no options identified with risk of non-compliance with WFD.

6.3.65 Anglian Water will continue to work closely with the Environment Agency, Natural England and others to ensure abstractions are sustainable throughout the course of the rdWRMP24.

SEA Objective 12 - To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

6.3.66 A key aim of Plan B is to achieve the BAU+ environmental destination scenario, which contributes to the WFD 'Good Ecological Status'. At this strategic stage of the plan and of the early development of individual options, when applying a precautionary environmental perspective, it is not possible to yet rule out risks to WFD objectives. The separate WFD assessment, which drives the findings for SEA Objective 12, have been undertaken on a confidence risk rating of 'low' in regard to the early stage of option design available at the rdWRMP24 scale. As project level work is developed as part of the implementation of rdWRMP24 further option refinements and assessments will take place. Where risks have been outlined for individual options within Plan B, the scope of further assessment and investigation has been set out, this detail can be found in rdWRMP24 WFD assessment report.

6.3.67 No significant effects are identified for the construction stage.

6.3.68 **Significant (major) positive effects** are identified in the operational stage as the BAU+ environmental destination includes targets to meet WFD objectives whilst maintaining a supply and demand balance for the region throughout the plan period. This includes the BAU+ scenario profiling the reductions imposed by licence capping to allow for the later part of the plan to be informed by the WINEP investigations. Key benefits of maximising opportunity for utilisation of an early surplus within Plan B will allow the delivery of the environmental destination reductions in the most sensitive areas. This will allow the environmental destination to achieve flows to support 'Good Ecological Status' whilst maintaining the supply and demand balance, which will be achieved through the Aspirational demand management portfolio contributing to a demand reduction of 221.8 Ml/d against the baseline by 2050.

6.3.69 No significant negative effects for the operational stage identified for Plan B overall.

6.3.70 The WFD assessment concluded that in Plan B there were no options identified with risk of non-compliance with WFD.

6.3.71 The WFD concluded that two options contributed to an increased risk in cumulative effect upon two water bodies of the Wash Estuary (Wash Inner and Wash Outer), due to combined downstream impacts from Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29). A separate study is currently underway to provide a better understanding of the potential combined effects of these options on the Wash. This study will be carried out as part of the SROs assessment for Gate 3 of the RAPID gate process.

SEA Objective 13 – To increase water efficiency and increase resilience of water supplies and natural systems to drought

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

6.3.72 A resilient water system is required in order to provide a reliable supply of water in the context of the challenge faced by a growing population and escalating climate change impacts. Plan B has been developed applying Anglian Water's Best Value Planning framework, as discussed in Chapters 2 and 5 of this report and within rdWRMP24 itself and the Decision Making Report technical supporting document.

6.3.73 No significant effects are identified overall for the construction stage.

6.3.74 **Significant (major) positive effects** are identified for the operational stage, overall. For the resilient water supplies element of this objective the finding is driven by the demand management options, specifically Government-led interventions, Leakage and Household water efficiency. Shifts in behavioural changes along with efficiency savings will allow Plan B to maintain a supply demand balance during the plan period, through increasing the volume of water resource available. This will increase resilience of water supplies and allow the licence capping measures to be implemented while maintaining the deployable output reductions required to meet BAU+ environmental destination for 2040. Achievement of this will be reached through the balancing of new supply options being delivered between 2036-2040 ensuring that negative effects of losses of over 300 Ml/d of existing public water supply abstraction capacity does not lead to adverse effects for Plan B as a whole, as the rdWRMP24 maintains a supply demand balance as required by statute.

6.3.75 As well as these, the key areas that have to be incorporated for Plan B are that of, the timing of drought resilience, demand management options and smaller scale supply-side options. The provision of a 1 in 500 year drought resilience (in 2040) whilst striving to achieve BAU+ environmental destination and maintaining a secure supply of water for Anglian customers, leads to significant (major) positive benefits upon SEA Objective 13 during operation.

6.3.76 The implementation of licence capping and the BAU+ environmental destination within Plan B's operational phase will drive significant positive benefits to the resilience of water related natural systems to drought. This benefit will result from the reduction and removal of existing Anglian Water abstraction licences, returning water to surface and groundwater sources, where it will be available during both drought and non-drought conditions making the related environmental system both more resilient during a drought, and better able to recover after such natural events.

6.3.77 No significant negative effects are identified for the operational stage overall.

SEA Objective 14 – To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Minor Positive Effects	Neutral

6.3.78 No significant positive effects are identified overall for the construction stage.

6.3.79 No significant negative effects are identified for the construction stage of Plan B; however, a minor negative finding is recorded as localised effects on soils are identified through temporary and/or permanent impacts from construction of new water supply infrastructure. These are identified within Holland on Sea desalination (seawater) (26 Ml/d) (EXS10), Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29), Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Lincolnshire East Groundwater (7.5Ml/d) (LNE11). As these effects result from four of the 50 supply-side options included in Plan B, they are not considered to lead to significant effects at the level of the plan as a whole. These effects are predominately linked to impacts on agricultural land of Grade 3 and above, with potential for disturbance to soils and or permanent loss where land has been taken and no current plan is available to describe how this will be reinstated. General techniques to reduce impacts include design-led changes that would aim to reduce the option footprint and the construction working area and apply soil management plans. These techniques would reduce the amount of land permanently taken or temporarily disturbed. Across the plan as a whole, there are likely to be localised and temporary effects on soils from disturbance associated with construction activities.

6.3.80 No significant positive effects are identified overall for the operational stage. It is anticipated that the plan will result in minor positive effects driven by the collective measures in Plan B that increase the availability of water within the natural environment. Collaborative working aims to

maximise benefits and to facilitate a supply for crops and alleviate flooding, along with the reduction of consumer demand, is expected to result in more water being kept within the natural environment, with benefits to the functionality and quality of soils and high-grade agricultural land.

6.3.81 No significant negative effects are identified overall for the operational stage.

SEA Objective 15 – To reduce and minimise air emissions during construction and operation

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Minor Negative Effects

6.3.82 The reduction and minimisation of air emissions complements rdWRMP24 Best Value Planning framework objectives to achieve a flourishing environment and not be detrimental to social wellbeing.

6.3.83 No significant positive effects are identified for the construction stage.

6.3.84 No significant negative effects are identified for the construction stage. Minor negative effects are identified, these are driven by construction related activities and emissions linked to supply-side options including desalination (Holland on Sea desalination (seawater) (26 Ml/d) (EXS10)) and WTW upgrades (Ruthamford South surface water enhancement (9.5 Ml/d up to 2040, 6 Ml/d after 2040) (RTS21) and increasing the utilisation of existing surface water licence at Lincolnshire East Surface Water (13 Ml/d before 2039, 7.3 Ml/d after 2039) (LNE12)). Effects will be temporary during construction of individual options, with mitigation including best practice measures and dust suppression implemented to reduce effects where possible; temporary minor effects are likely to remain.

6.3.85 No significant positive effects are identified during the operational stage.

6.3.86 No significant negative effects are identified during the operational stage. Minor negative effects are identified, driven by localised minor negative effects for demand management options of Smart Meters and Non-Household Water Efficiency, as result of the air emissions due to travel associated with the installation of smart meters (completed in the first five years of WRMP24 period) and audit visits respectively.

SEA Objective 16 – To minimise/reduce embodied and operational carbon emissions

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Neutral	Moderate Negative Effects

6.3.87 Anglian Water's wider plan-making process led to the consideration of quantified carbon and produced carbon metrics that form part of the best value plan-making approach that generated Plan B. This includes both the carbon associated with the construction of new options (known as capital or embodied carbon) and the carbon produced during operational activities (known as operational carbon). It should be noted that these calculations within the C55 supply option model were conducted separately to the SEA's assessment of SEA Objective 16 and have not informed its findings.

6.3.88 The ambition of minimising and reducing carbon is part of the plan's objective of long-term environmental improvement. In developing Plan B, the delay in phasing of options with higher operational carbon emissions, such as desalination, has sought to allow time for advances in technology and for greater use of renewable energy to be available when these options are required.

6.3.89 No significant positive effects have been identified at the construction stage.

6.3.90 **Significant (moderate) negative effects** are identified at the construction stage. This effect is driven by the capital carbon emissions associated with constructing supply-side options. For example the reservoirs (Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29)) and the four desalination options included in Plan B: Holland on Sea desalination (seawater) (26 Ml/d) (EXS10), Mablethorpe desalination Seawater (50 Ml/d) (LNE6), South Humber Bank Non-potable desalination (60 Ml/d) (SHB9) and Bacton desalination (seawater) (25 Ml/d) (NTB17). The development of pipelines transferring raw and treated water, the earthworks needed to construct the reservoirs and the works related to enhanced leakage reduction within the rdWRMP24's Aspirational demand management portfolio also contribute to this effect. It is expected that the application of PAS:2080 (the global standard for reducing carbon) will help drive carbon efficiencies through the rdWRMP24 implementation period, in particular within the design process for these components of the plan. For example, through optimising the length, diameter, wall thickness, and material of pipelines. In addition, maximising the use and reuse of excavated material within the construction site is also expected to mitigate impacts.

6.3.91 No significant positive effects have been identified at the operational stage.

6.3.92 **Significant (moderate) negative effects** are identified in the operational stage. This is driven by the energy intensive processes required through the inclusion of 161 Ml/d of desalination plants within the supply-side options: Holland on Sea desalination (seawater) (26 Ml/d) (EXS10), Mablethorpe desalination Seawater (50 Ml/d) (LNE6), South Humber Bank Non-potable desalination (60 Ml/d) (SHB9) and Bacton desalination (seawater) (25 Ml/d) (NTB17). The supply-side options that risk requiring higher levels of operational carbon are phased to become operational between 2036 and 2040 allowing time for the inclusion of advanced technologies and an increased utilisation of renewable energy. As a result, the significant effects identified may be subject to change with the refinement of operational carbon options. However, based on the current assessment, this remains as a significant (moderate) negative effect during operation.

6.3.93 The need to provide new supply-side options in response to wider environmental benefits from the plan, including 1 in 500 year drought resilience in 2040 and BAU+ environmental destination reductions by 2040, drives increases in the operational carbon emissions. Anglian Water will plan for this and manage it in order to remain net zero operationally from the late 2030's.

6.3.94 **Additional mitigation**: In addition to the assessment findings directly relating to Plan B, Anglian Water's implementation of the plan will sit within the context of its corporate Net Zero Strategy. This provides the opportunity for further mitigation of the moderate negative operational effects reported here, and notably includes a commitment to net zero operational carbon by 2030 (meaning overall no impact on greenhouse gases in the atmosphere from Anglian Water's operational emissions).

6.3.95 Actions in the Net Zero Strategy include maximising energy efficiency and renewable energy generation and storage; procuring green electricity; managing process emissions, and other measures. Capital (embodied) carbon emissions are assessed at every stage of project delivery, with targeted reductions being driven by a four-step hierarchy of: No build; Reuse assets; Optimise design; Change materials to low carbon alternatives.

6.3.96 **Therefore, assuming Plan B is implemented in line with the provisions of this commitment and strategy there are additional corporate scale mitigation and management opportunities to reduce the significant effects reported here.** However, as the extent and nature of these reductions are not known at the time of this assessment, a precautionary approach has been taken to reporting the SEA significant effects for Objective 16.

SEA Objective 17 - To introduce climate mitigation where required and improve the climate resilience of assets and natural systems

Construction Effects		Operational Effects	
Neutral	**Neutral**	**Major Positive Effects**	**Neutral**

6.3.97 Plan B strives to increase the resilience of water systems within the region by providing drought resilience for a 1 in 500 year drought by 2040. This means holding sufficient additional water in Anglian Water's supply system, beyond that needed for normal operational demands, in order to enable public water supplies to be resilient to an extreme drought scenario.

6.3.98 No significant effects are identified during the construction stage, giving a neutral rating. No significant negative effects are identified during the construction stage overall, giving a neutral rating.

6.3.99 **Significant (major) positive effects** are identified through the operation stage. In terms of assets. the ability of public water supplies to be resilient to a 1 in 500 year drought, from 2040, as opposed to 1 in 200 year drought resilience at the start of the rdWRMP24 period is a contributory factor. In addition, all five of the demand management options will reduce the levels of water demand, enabling customers to become more water efficient and through this, deliver a more resilient public water supply system. Decreases in water demand from households through Government-led interventions including education will raise the awareness of customers to the importance of taking action and supporting climate resilience behaviours. This will support the plan in achieving the desired supply-demand balance and improve the availability of water as a natural resource.

6.3.100 In terms of natural systems, licence capping of existing Anglian Water abstractions between 2030 and 2036 will remove the risk of the related surface and groundwater sources seeing increased abstractions – above recent actual average rates of abstraction. The BAU+ environmental destination abstraction reductions that rdWRMP24 delivers in 2040 will lead to approximately 240 Ml/d of water being returned to the environment which should act to improve the resilience of natural systems to climate change.

6.3.101 No significant negative effects are identified during the operational stage overall, giving a neutral rating.

SEA Objective 18 - To conserve/protect and enhance the historic environment including the significance of designated and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

6.3.102 No significant effects are identified at the construction stage, giving a neutral rating.

6.3.103 No significant negative effects are identified at the construction stage overall. Minor negative effects are identified and driven by individual supply-side options, for example: the new reservoir options being identified as having localised significant (moderate) negative effects. This is driven by the proximity of Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) and the design and placement of reservoir embankments to Moated Bishops' palace at Manor Farm Scheduled monument and Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) to Medieval moated site, settlement and cultivation remains, post-medieval park and garden, Thorpe Latimer. Due to the stage of design a precautionary environmental perspective is applied, with the options subject to mitigation measures including re-routing of transfers or minimisation of working width. Further works in the next stages of design development will require the need to determine whether the likely significant effects remain, depending on the presence or absence of buried archaeology. The use of appropriately qualified archaeologists to

provide watching briefs during construction is expected to be applied in proximity to sensitive receptors as a mitigation measure.

6.3.104 No significant positive or negative effects are identified at the operation stage.

SEA Objective 19 - To conserve, protect and enhance landscape and townscape character and visual amenity

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Moderate Positive Effects**	**Neutral**

6.3.105 Plan B aims to deliver long-term environmental improvement and enhance the natural environment. Maintaining an attractive natural landscape whilst delivering a reliable and sustainable water supply has been taken into account alongside the need for flexibility to manage the changing growth and demands of the region.

6.3.106 No significant positive effects are identified for the construction stage.

6.3.107 No significant negative effects are identified at the construction stage overall. There are not predicted to be any significant effects on designated landscapes as a result of Plan B, including consideration of the supply-side options included within it. Localised negative effects to landscape and visual amenity are identified in relation to excavation works which could result in temporary and permanent impacts from construction of large-scale infrastructure, particularly Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29), where the construction of the reservoirs will have a permanent effect. These impacts are predominately linked to changes to rural or semi-rural landscapes, with potential for effects on landscape character. These effects could be significant at a local scale. The plan will also result in localised temporary effects on visual amenity for some communities from disturbance associated with construction activities for supply-side options, including the construction of new transfer mains.

6.3.108 **Significant (moderate) positive effects** are identified at the operational stage. This effect is driven by the collective measures that increase the availability of water within the natural environment, with benefits to the natural landscape. Directly, this results from BAU+ environmental destination – delivered by 2040 – and the phased implementation of licence capping between 2030 and 2036. Indirectly, the five demand management options reduce demand by over 221.8 Ml/d by 2050, avoiding the need for additional equivalent supply-side abstractions, which would remove water from the environment. Many of the natural landscapes across Anglian Water's supply area, including those under existing water stress, will benefit. This also provides the platform on which to increase the recovery of natural landscapes, with localised opportunities for enhancement being identified as part of project-level interventions (for example, BNG solutions) which also deliver benefit to the landscape.

6.3.109 No significant negative effects are identified at the operational stage overall.

SEA Objective 20 - To minimise resource use and waste production

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

6.3.110 Plan B contributes to optimising the resource available and reaching the overarching supply and demand need of the rdWRMP24. Water resource planning involves the optimisation of current water resources. Plan B incorporates the reuse of existing infrastructure, including WTW upgrades and water reuse (Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19)). Plan B will support the Lawton recommendation for the planning of water management by increasing resource efficiency, most

prominently shown by demand management, water treatment upgrades, including the inclusion of 13 backwash recovery schemes, and water reuse.

6.3.111 Within the plan individual options are anticipated to generate some waste. The demand management options aim to reduce demand and decrease the amount of water leakage in the region. The demand management option of leakage will reduce the volume of waste produced within the catchment, by reducing water losses within the existing infrastructure system and decrease the volume of waste.

6.3.112 No significant effects are identified at the construction stage.

6.3.113 No significant negative effects are identified at the construction stage, overall. Minor negative construction effects are identified with the larger desalination options such as Mablethorpe desalination Seawater (50 Ml/d) (LNE6) and South Humber Bank Non-potable desalination (60 Ml/d) (SHB9), and Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) contributing effects respectively due to large resource and material use during construction.

6.3.114 No significant positive or negative effects are identified for the operational stage overall, giving neutral ratings. Any localised effects related to implementation of specific components of the plan, will be managed as part of Anglian Water's wider operational activities.

SEA Objective 21 - To avoid negative effects on built assets and infrastructure (including green infrastructure)

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

6.3.115 The aim of avoiding disruption to existing built assets and infrastructure has been considered in outlining the preliminary locations of the supply-side options included in Plan B. At this plan level stage, the assessment is high level and standard mitigation such as highway diversions are likely to be employed to continue to avoid negative effects on property and people.

6.3.116 No significant positive effects are identified at the construction stage.

6.3.117 No significant negative effects are identified at the construction stage overall. Minor negative construction effects were identified for SEA Objective 21, with Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) contributing localised significant (moderate) negative effects. The phased construction of each option is likely to avoid effects for Plan B.

6.3.118 No significant positive or negative effects are identified at the operation stage. Through links with Anglian Water's developing corporate biodiversity net gain strategy the delivery of Plan B does, however, provide a platform to increase green infrastructure and aid the recovery of natural landscapes, with localised opportunities for enhancement being identified as part of project-level interventions (for example, BNG solutions).

6.4 Summary

6.4.1 This Chapter reports the findings of the assessment of the SEA Objectives to the Best Value Plan (Plan B), setting out the likely significant effects. The identification of significant effects has been informed by other environmental assessments. The findings from these assessments are set out in the relevant sub-reports:

- Habitats regulation assessment
- Water framework directive assessment
- Biodiversity net gain and natural capital assessment
- Invasive non-native species assessment

6.4.2 For the SEA, in terms of construction effects, no significant positive effects are found to result from Plan B; however, two SEA Objectives are found to result in significant negative effects, although it must be recognised that one of these are evaluated as significant moderate effects, with SEA Objective 2 found to have major negative effects. This is not a surprising result for a WRMP, as the plan is required to deliver a supply demand balance and thus often contain a programme of new infrastructure building over the 25-year plan period. In Anglian Water's case its rdWRMP24 includes the new infrastructure needed to address over 500 Ml/d of supply demand balancing, even after the plan's Aspirational portfolio of demand management options is taken into account. While not always the case, it should also be recognised that environmental and social effects from construction will occur for a shorter period than those associated with the operational stage of an asset, or implementation of the BAU+ environmental destination.

6.4.3 Plan B performs well across the operational findings of the SEA, which by their nature tend to be longer-term, either permanent, or for the lifespan of the Plan, or the assets delivered. Plan B has significant positive effects across 13 of the 21 SEA Objectives, covering the topics: Biodiversity, Population and Human Health, Water, Climatic Factors and Landscape. Of these 13 significant positive effects the majority (eight) are found to be major beneficial long-term effects, with a further four moderate positive significant effects. It must be recognised that Plan B also has significant adverse effects during operation – to the same SEA Objectives as affected during the construction phase, across Biodiversity, and Climatic Factors, all of which are evaluated to be moderate negative effects.

6.4.4 The assessment of Plan B as a whole has considered where different components or options within the plan may interact and reported instances where this results in a significant effect. The consideration of cumulative effects as a result of the interaction of Plan B with other (outside of the rdWRMP24) projects and plans are reported in Chapter 8. The assessment reports the residual significant effects, giving a view of the likely performance of the plan following the application of avoidance, reduction and other mitigation measures, these mitigation measures are collated and reported in Chapter 9.

7 Alternative Plans and Wider Considerations

7.1 Overview

7.1.1 This Chapter sets out the findings of the assessment of three alternative plans (Plans A, C and D) as described in 7.2 below. The same level of assessment has been applied to the alternative plans as to Plan B, the Best Value Plan, whose findings are presented in Chapter 6. The development of the three alternative plans has been informed by the environmental assessment metrics and discussions of the assessment findings as the plan has developed (see Chapter 5, Sections 5.6 and 5.7). For further details on the development of the alternative plans, please refer to the rdWRMP24 Decision Making Report technical supporting document.

7.1.2 The components that make up of each of the three alternative plans are described at the start of their respective sub-Sections (7.3, 7.4 and 7.5) providing an understanding of the content of each of the plans. The alternative plans have many components in common with the Best Value Plan (Plan B). Therefore, to avoid repetition of effect details, cross reference is made to the findings presented for Plan B, where the description of effects presented in Chapter 6 is also relevant to the effects arising under the same SEA objective for the alternative plan. The detailed assessment findings for each of the components included in each of the alternative Plans are set out in the individual SEA matrices, which can be found in Appendix A of this report. The findings of the assessments of Plans A (Section 7.3), C (Section 7.4) and D (Section 7.5) are presented below.

7.1.3 Following the assessment of each of the alternative plans the text goes on to provide a comparative analysis of the performance of each alternative to the BVP (Plan B). This is set out in Section 7.6.

7.1.4 Beyond the three alternative plans, Anglian Water's plan-making has sought to ensure that Plan B of the rdWRMP24 is an adaptive plan, which can respond to changes in circumstances. This approach aligns with expectations set out in the Environment Agency's WRPG. The adaptive plan is based on a series of core elements, which are present in all cases, after which adaptive pathways are introduced in response to specific circumstance that could arise, for example demand management proving to be less effective than anticipated, or the WINEP investigations into environmental destination identifying a need to move from BAU+, either down to BAU, or up to Enhance. While these are not true alternatives to Plan B and thus not reasonable alternatives, they provide a clear indication of the pathways open to rdWRMP24's BVP and demonstrate how it is anticipated it would respond to such challenges. The assessment findings of the change in environmental and social consequences compared to Plan B that are predicted to occur from each Adaptive Planning pathway, are presented in Section 7.7.

7.2 Assessment of Alternative Plans

The following sub-Sections present the likely significant effects against each of the SEA Objectives for the three alternative plans (A, C and D) generated within the plan-making process for rdWRMP24. The methodology applied in undertaking the assessment is set out in Chapter 4: Environmental Assessment Methodology. The significant effects reported are based on assessment findings (identifying significant effects) in the SEA matrices for all these components, which can be found in Appendix A of this report.

7.2.1 The significant effects reported here are residual effects, meaning that the mitigation measures identified in the 'mitigation' column of the assessment matrices of each component (available in Appendix A, SEA Options Assessment) have been applied. Further description of mitigation/ enhancement measures that have been considered is provided within Chapter 9: Mitigation

Measures and Enhancement Opportunities. Therefore, this information has not been replicated here.

7.2.2 The SEA findings reported here apply the same approach as applied to Plan B – the BVP – and consider the plan as a whole. Each of the alternative plans contain the same types of components as the Best Value Plan (Plan B), i.e. an environmental destination scenario, licence capping timing, drought resilience, demand management options, WINEP options and supply-side options. Some of these components are the same across all the plans, whereas others differ and are highlighted in the introduction to each alternative plan.

7.2.3 For each of the alternative plans the overall significant effects findings for each SEA Objective are provided, covering construction effects (positive and negative) and operational effects (positive and negative). In recognising the same environmental effects would arise in each of the alternative plans, where they include components that are also included in Plan B, and to avoid repetition, the description of the assessment findings for the alternative plans highlights the similarities and differences to the Best Value Plan, Plan B. In some cases, the overall rating for significant effects is the same as Plan B as the same drivers of those effects are found in both plans. In other cases, the overall finding for significant effects is the same as Plan B, but there are different drivers, in which case, the drivers instigating the differences are described. Finally, in some cases reasons for the overall rating for significant effects is different, and this is included in the description of the effects.

7.2.4 The alternative plans to Plan B are:

- Plan A: Initial least cost plan based on the initial most likely scenario (Section 7.3)
- Plan C: Least cost plan based on preferred most likely scenario (Section 7.4)
- Plan D: Least cost plan based on best for environment (abstraction) scenario (Section 7.5)

7.2.5 Plans A, C and D therefore make up the alternative plans to the BVP (Plan B) which is the preferred plan in the rdWRMP24 report.

7.3 Plan A

7.3.1 Plan A formed the basis of the development of the alternative plans and its development is discussed in rdWRMP24's Decision Making Report technical supporting document. As the description above indicates it is a least cost plan, so is driven by selecting the lowest cost supply-side solutions based on the modelling generated by its supply demand forecast. The policy decisions (e.g. demand management, timing of licence capping), that contribute to the supply and demand forecast is termed the initial most likely scenario and vary from those used for the other the plans (B, C and D), and are set out below. Policy decisions applicable to Plan A are:

- Environmental destination: achieving BAU+ environmental destination starting in 2036 and profiled over time by prioritising the most sensitive areas in the Anglian Water region. This approach would limit opportunities for Plan A to be adapted based on the outcome of the AMP 8 WINEP investigations.
- 1 in 500 year drought resilience is achieved by 2039.
- Demand management applies the Aspirational portfolio.
- The timing of licence capping – reducing the cap on abstraction from peak to average – is set as 2036 for all other Anglian Water licences, other than those that are time limited (which are delivered in 2030). This licence capping approach is known as scenario 4, which differs from the phased earlier delivery applied in the other three plans (B, C and D).

7.3.2 In addition, it should be noted that the programme of river support and restoration projects identified by the separate WINEP process for AMP8 (known as WINEP options) are the same in all four plans (A-D).

7.3.3 A characteristic of Plan A being a least cost plan is that the selection of available supply-side options, to resolve supply deficits within the generation of the plan through the modelling, are selected based on their costs, as opposed to being optimised to improve the overall value delivered.

7.3.4 The supply-side options selected in Plan A are set out in Table 7.1 below.

Table 7.1: Plan A Supply-side options

Ref	Description	Operation Date	Option also selected in Plan B?
CAM4	Ruthamford South to Cambridge Water potable transfer (50 Ml/d)	2030	Yes
LNC25	Lincolnshire East to Lincolnshire Central potable transfer (29 Ml/d)	2030	Yes
EXC3	Essex South to Essex Central potable transfer (10 Ml/d)	2030	Yes
FND22	Marham abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039)	2030	Yes
LNE11	Lincolnshire East Groundwater (7.5 Ml/d)	2030	Yes
LNE12	Lincolnshire East Surface Water (13 Ml/d before 2039, 7.3 Ml/d after 2039)	2030	Yes
LNN3	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72 Ml/d)	2030	Yes
NAY5	Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	2030	Yes
NBR6	Fenland to Norfolk Bradenham potable transfer (50 Ml/d)	2030	Yes
NEH3	Suffolk Thetford to Norfolk East Harling potable transfer (5 Ml/d)	2030	Yes
NHL4	Norfolk East Harling to Norfolk Harleston potable transfer (5 Ml/d)	2030	Yes
NTB10	Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	2030	Yes
RTS16	Ruthamford South Drought permit (2.07 Ml/d)	2030	Yes
RTS21	Ruthamford South surface water enhancement (9.5 Ml/d up to 2039, 6 Ml/d after 2040)	2030	Yes
SUE23	Suffolk East WTW Upgrade (1.7 Ml/d)	2030	Yes
SUE24	Suffolk Sudbury to East Suffolk potable transfer (10 Ml/d)	2030	Yes
SUT6	Backwash water recovery, Suffolk East WTW (0.05 Ml/d)	2030	Yes
SWC8	Cambridge to Suffolk West Cambs potable transfer (50 Ml/d)	2030	Yes
SWC13	Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	2030	Yes
EXC7	Backwash water recovery, Essex Central WTW (0.3 Ml/d)	2032	Yes
EXS7	Backwash water recovery, Essex South WTW (0.3 Ml/d)	2032	Yes
FND26	Backwash water recovery, Fenland WTW (0.2 Ml/d)	2032	Yes
NBR9	Backwash water recovery, Norfolk Bradenham WTW (0.2 Ml/d)	2032	Yes
SUE25	Backwash water recovery, Suffolk East WTW (0.17 Ml/d)	2032	Yes
EXS19	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039)	2033	Yes
LNC28	Bulk trade agreement - River Trent (7 Ml/d)	2036	Yes

Ref	Description	Operation Date	Option also selected in Plan B?
LNE6	Mablethorpe desalination Seawater (50 Ml/d)	2036	Yes
LNN1	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3 Ml/d)	2036	Yes
NED2	Norfolk Bradenham to Norfolk East Dereham potable transfer (10 Ml/d)	2036	Yes
NNC4	Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	2036	Yes
NTB28	Lowestoft and Caister reuse combined (to Costessey) – treatment (27.5 Ml/d)	2036	**No**
NWY1	Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	2036	Yes
RTS24	Ruthamford North to Ruthamford South potable transfer (75 Ml/d)	2036	Yes
SHB9	South Humber Bank Non-potable desalination (60 Ml/d)	2036	Yes
FND29	Fens Reservoir 50MCM (usable volume) (44.4 Ml/d)	2036	Yes
SUT5	Norfolk Bradenham to Suffolk Thetford potable transfer (15 Ml/d)	2036	Yes
RTN29	Lincolnshire Central to Ruthamford North potable transfer (60 Ml/d)	2039	**No**
RTN17	Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d)	2039	Yes
EXS10	Holland on Sea desalination (seawater) (26 Ml/d)	2040	Yes
LNB1	Ruthamford North to Bourne potable transfer (20 Ml/d)	2040	Yes
LNC16	Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d)	2040	Yes
RTC3	Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	2042	Yes

7.3.5 In total Plan A includes 42 supply-side options, compared to 50 options selected in the preferred plan, Plan B, as set out in Chapter 6. This includes:

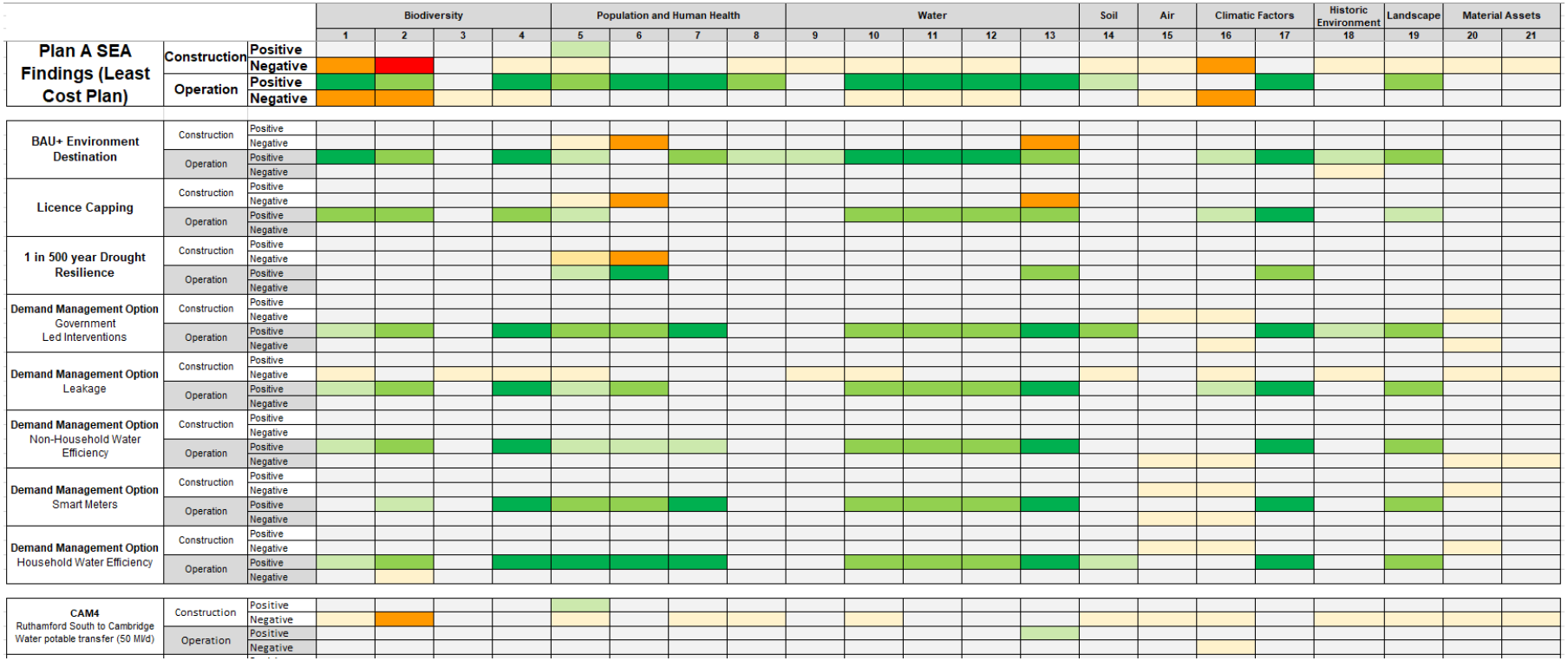
- Supply-side options that appear in Plan A that are not in Plan B are: Lowestoft and Caister reuse combined (to Costessey) - treatment (27.5 Ml/d) (NTB28), and Lincolnshire Central to Ruthamford North potable transfer (60 Ml/d) (RTN29).
- Supply-side options that appear in Plan B that are not in Plan A are: Bacton desalination (seawater) (25 Ml/d) (NTB17), Lincolnshire Central WTW Upgrade (3.2 Ml/d) (LNC30), six backwash recovery schemes at WTW: North Norfolk Coast WTW backwash water recovery (0.18Ml/d) (NNC5), North Norfolk Coast WTW backwash water recovery (0.2Ml/d) (NNC6), Backwash water recovery, Lincolnshire East WTW (1.3Ml/d) (LNE3), Backwash water recovery, Norfolk Aylsham WTW (0.75Ml/d) (NAY4), Backwash water recovery, Norfolk East Dereham WTW (0.1Ml/d) (NED3) and Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d) (NHL7) and two transfers Norwich and the Broads to Aylsham potable transfer (0.3Ml/d) (NAY1) and Lincolnshire Central to Ruthamford North potable transfer (75Ml/d) (RTN30).

7.3.6 The SEA's assessment of likely significant effects of rdWRMP24 relates to the environmental consequences (positive or negative) in relation to each SEA Objective. Figure 7.1 presents the SEA findings of Plan A. The top of Figure 7.1 presents the overall assessment rating for each SEA objective as a result of Plan A's construction and operation. The key – explaining the colour coding – helps to indicate where likely significant effects are predicted to result from Plan A and is set out in Table 6.4. The remainder of the figure portrays the contributing components to Plan A, these are the specific individual findings for each of the components of the rdWRMP24 and can be found in Appendix A (SEA Options Assessment). The assessment findings for all components of Plan A were reviewed and taken into account in identifying,

describing and evaluating the likely significant effects of Plan A, as presented at the top of Figure 7.1 and discussed for each SEA objective, below.

7.3.7 As the majority of components of the Plan A are similar to Plan B, many of the drivers of the significant effects of Plan A are the same or similar to those for Plan B. Therefore, where this is the case, this explanation is not repeated and is as described in the assessment of Plan B.

Figure 7.1: Plan A SEA Findings Matrix



			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
LNC25 Lincolnshire East to Lincolnshire Central potable transfer (29 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXC3 Essex South to Essex Central potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND22 Marham abstraction (7.9Ml/d up to 2039, 12.3Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE11 Lincolnshire East Groundwater (7.5Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE12 Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNN3 Lincolnshire Retford and Gainsborough resource optimisation (0.72Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NAY5 Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR6 Fenland to Norfolk Bradenham potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NEH3 Suffolk Thetford to Norfolk East Harling potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NHL4 Norfolk East Harling to Norfolk Harleston potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NTB10 Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
RTS16 Ruthamford South Drought permit (2.07Ml/d) (Winter)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS21 Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE23 Suffolk East WTW Upgrade (1.7Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE24 Suffolk Sudbury to East Suffolk potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT6 Backwash water recovery, Suffolk East WTW (0.05Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC8 Cambridge to Suffolk West Cambs potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC13 Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXC7 Backwash water recovery, Essex Central WTW (0.3 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS7 Backwash water recovery, Essex South WTW (0.3Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND26 Backwash water recovery, Fenland WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR9 Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
SUE25 Backwash water recovery, Suffolk East WTW (0.17 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS19 Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC28 Bulk trade agreement - River Trent (7 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE6 Mablethorpe desalination Seawater (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNN1 Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3.5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NED2 Norfolk Bradenham to Norfolk East Dereham potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC4 Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NTB28 Lowestoft and Caister reuse combined (to Costessey) - treatment (27 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NWY1 Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS24 Ruthamford North to Ruthamford South potable transfer (75 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SHB9 South Humber Bank non-potable desalination (60 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
FND29 Fens Reservoir 50MCM (usable volume) (44.4Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT5 Norfolk Bradenham to Suffolk Thetford potable transfer (15 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN29 Lincolnshire Central to Ruthamford North potable transfer (60 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN17 Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS10 Holland on Sea desalination (seawater) (25 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNB1 Ruthamford North to Bourne potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC16 Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTC3 Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
BRETT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
COLNE	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
GIPPING	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
PANT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
STIFFKEY	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

SEA Objective 1 - To protect designated sites and their qualifying features

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Major Positive Effects	Moderate Negative Effects

7.3.8 Overall Plan A having examined all the potential construction and operational effects in light of the individual Habitats Site's conservation objectives and at this stage (the plan making stage) taking a precautionary approach to the assessment. It can be concluded that the rdWRMP24 would not give rise to adverse effects on the integrity of individual habitats sites within Plan B, as assessed against the conservation objectives.

7.3.9 The profile of timing of the delivery of licence capping (permanent licences all capped in 2036) and environmental destination BAU+ from 2036 to 2040 in Plan A is not considered to change the significant positive environmental effects that will occur to designated sites as a result of reducing existing Anglian Water abstractions as a result of this policy decision.

7.3.10 The Plan A supply-side options include many of the same options described in findings for Plan B (Section 6) and as such identified a similar level of effect overall as Plan B. However, Plan A also includes localised significant (moderate) negative effects from Lowestoft and Caister reuse combined (to Costessey) - treatment option (27.5 Ml/d) (NTB28), due to the option directly intersecting the River Wensum SSSI as a driver for the overall plan score.

SEA Objective 2 – To deliver BNG, protect biodiversity, priority species and vulnerable habitats such as chalk rivers

Construction Effects		Operational Effects	
Neutral	Major Negative Effects	Moderate Positive Effects	Moderate Negative Effects

7.3.11 The overall significant effects for Plan A for SEA Objective 2 are set out in Section 6. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.12 The addition of Lowestoft and Caister reuse combined (to Costessey) - treatment option (27.5 Ml/d) (NTB28) has significant major negative effects in construction, as a result of the disturbance effects on protected species as the pipeline intersects with priority habitats. Habitat clearance associated with construction of the option is expected to result in the permanent loss of BNG units (this is not a material difference for the plan as a whole).

7.3.13 Plan A places greater emphasis on maximising supply early in the planning period, unlike Plan B, Plan A does not allow for the options to be adapted or scaled based on the results of the WINEP investigations. Plan A requires more desalination supply-side options to be under construction earlier to enable their operation by 2036, whereas in Plan B this is extended to 2040. This contributes to the moderate negative effects in the operational stage on Objective 2.

7.3.14 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

7.3.15 **Additional mitigation**: The Biodiversity Roadmap, set out in Section 4.4 of the rdWRMP24 sub-report C - *Biodiversity Net Gain and Natural Capital Assessment* provides a clear basis for Plan A to contribute to Anglian Water's developing Corporate Strategy on BNG. It is clear that the development of this corporate strategy, provides the basis to help avoid, and where practicable, reduce the loss of habitat in Plan A's implementation, and to respond to any remaining on-site losses with the delivery of BNG in the local area, or at strategic sites. **The**

outcome of which has the potential to remove Plan A's significant (moderate) negative operational effect and result in a minor rating for the Plan's construction negative findings.

SEA Objective 3 - To avoid spreading and, where required, manage invasive and non-native species (INNS)

Construction Effects		Operational Effects	
Neutral	Neutral	Neutral	Minor Negative Effects

7.3.16 The overall significant effects for Plan A for SEA Objective 3 are set out above. The drivers of the effects are the same as those described for Plan B (Section 6) and are not repeated here.

SEA Objective 4 - To meet WFD objectives relating to biodiversity

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.3.17 The overall significant effects for Plan A for SEA Objective 4 are set out above. The drivers of the significant effects are the same as those described for Plan B and are not repeated here. Further information can be found in the relevant WFD Level 2 assessments in sub-report B – *Water Framework Directive Assessment*.

SEA Objective 5 - To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing

Construction Effects		Operational Effects	
Minor Positive Effects	Minor Negative Effects	Moderate Positive Effects	Neutral

7.3.18 The overall significant effects for Plan A for SEA Objective 5 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.19 Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) will be operational one year earlier in Plan A compared to Plan B. As a result, the associated positive benefits to the health and wellbeing of the local community will be realised sooner. Improved recreational opportunities and construction of more green / blue space will aid in improving physical and mental health and wellbeing, whilst permanent job creation is expected to improve social capital and boost the local economy.

SEA Objective 6 - To secure resilient water supplies for the health and wellbeing of customers

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.3.20 The overall significant effects for Plan A for SEA Objective 6 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.21 Plan A places a greater emphasis on delivering drought resilience as early as possible with a 1 in 500 year drought resilience being achieved in 2039. This is in order to maintain water supplies during drought events and provide positive health and wellbeing benefits. To achieve

this, Plan A also requires high investment early on to meet supply reductions, this aids in delivering BAU+ benefits to the natural environment starting in 2036 but is less adaptive in the long-term due to the initial level of investment. In order to contribute to the overall supply during the middle of the plan period, Plan A requires two supply-side desalination options to become operational by 2037. These are: South Humber Bank Non-potable desalination (60 Ml/d)) (SHB9) and Mablethorpe desalination Seawater (50 Ml/d) (LNE6), whereas Plan B only requires one desalination plant (South Humber Bank Non-potable desalination (60 Ml/d) (SHB9)) to be operational by 2036.

SEA Objective 7 - To increase access and connect customers to the natural environment, provide education or information resources for the public

Construction Effects		Operational Effects	
Neutral	**Neutral**	**Major Positive Effects**	**Neutral**

7.3.22 The overall significant effects for Plan A for SEA Objective 7 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 8 - To maintain and enhance tourism and recreation

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Moderate Positive Effects**	**Neutral**

7.3.23 The overall significant effects for Plan A for SEA Objective 8 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.24 The addition of Lowestoft and Caister reuse combined (to Costessey) - treatment option (27.5Ml/d) (NTB28) has localised temporary negative effects in the construction stage. This is as a result of disturbance effects on recreation as the pipeline route is within 500m of a golf course, playing fields, and two country parks. The proposed pipeline option also intersects two National Cycle Network Routes, creating temporary severance of the route and impacting recreation. The overall negative effects remain as stated.

7.3.25 Plan A places a greater emphasis on delivering the highest contributing supply-side options quickly. Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) will be operational one year earlier in Plan A compared to Plan B. As a result, the improved recreational opportunities, and the increase in green / blue space available will be realised sooner, benefitting tourism and recreation.

SEA Objective 9 - To reduce or manage flood risk, taking climate change into account

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

7.3.26 The overall significant effects for Plan A for SEA Objective 9 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.27 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

SEA Objective 10 - To enhance or maintain surface water quality, flows and quantity

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.3.28 The overall significant effects for Plan A for SEA Objective 10 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here. Further information can be found in the relevant WFD Level 2 assessments in sub-report B – *Water Framework Directive Assessment*.

7.3.29 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

SEA Objective 11 - To enhance or maintain groundwater quality and resources

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.3.30 The overall significant effects for Plan A for SEA Objective 11 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here. Further information can be found in the relevant WFD Level 2 assessments in sub-report B – *Water Framework Directive Assessment*.

7.3.31 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

SEA Objective 12 - To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.3.32 The overall significant effects for Plan A for SEA Objective 12 ae set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here. Further information can be found in the relevant WFD Level 2 assessments in sub-report B – *Water Framework Directive Assessment*.

7.3.33 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

SEA Objective 13 - To increase water efficiency and increase resilience of water supplies and natural systems to drought

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.3.34 The overall significant effects for Plan A for SEA Objective 13 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.35 Plan A places a greater emphasis on delivering drought resilience as early as possible, with 1 in 500 year drought resilience being achieved in 2039, a year earlier than Plan B. Plan A includes Lowestoft and Caister reuse combined (to Costessey) – treatment option (27.5Ml/d) (NTB28) which involves securing the supply from an existing WTW , rather than abstraction direct from surface or groundwater, this will help build resilience during potential future drought scenarios. This option is due for operation in 2036-2037 and will therefore contribute to the overall supply during the middle of the plan period (2025-2050), improving water security and drought resilience. In Plan A licence capping of wider licences to recent actual occurs in 2036, whereas it is phased in Plan B which offers greater benefit and flexibility.

SEA Objective 14 - To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Minor Positive Effects	Neutral

7.3.36 The overall significant effects for Plan A for SEA Objective 14 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.37 The addition of Lowestoft and Caister reuse combined (to Costessey) – treatment option (27.5Ml/d) (NTB28) has localised significant (major) negative effects during construction as the option intersects Grades 1, 2, 3 and 4 agricultural land, and new infrastructure will result in the permanent loss of Grade 3 agricultural land. This finding is not considered to affect the overall score on negative construction effects to this objective.

7.3.38 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

SEA Objective 15 - To reduce and minimise air emissions during construction and operation

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Minor Negative Effects

7.3.39 The overall significant effects for Plan A for SEA Objective 15 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.40 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

SEA Objective 16 - To minimise/reduce embodied and operational carbon emissions

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Neutral	Moderate Negative Effects

7.3.41 The overall significant effects for Plan A for SEA Objective 16 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.42 Plan A places greater emphasis on maximising supply early in the planning period, it does not have the same phasing of supply-side options as Plan B. Plan A is less adaptable and scalable as it does not wait for the results of the WINEP investigations to inform the scale of the desalination options within the Plan. Plan A requires more desalination supply-side options to be under operational by 2036, whereas in Plan B this is extended to 2040. This contributes to the moderate negative construction and operational effects on Objective 16.

SEA Objective 17 - To introduce climate mitigation where required and improve the climate resilience of assets and natural systems

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.3.43 The overall significant effects for Plan A for SEA Objective 17 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.44 In Plan A licence capping of wider licences to recent actual occurs in 2036, whereas it is phased in Plan B, which offers greater benefit and flexibility to resilience of assets but has a corresponding negative influence on natural system resilience for Objective 17.

SEA Objective 18 - To conserve/protect and enhance the historic environment including the significance of designated and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Neutral

7.3.45 The overall significant effects for Plan A for SEA Objective 18 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.46 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

SEA Objective 19 - To conserve, protect and enhance landscape and townscape character and visual amenity

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Moderate Positive Effects	Neutral

7.3.47 The overall significant effects for Plan A for SEA Objective 19 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 20 - To minimise resource use and waste production

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

7.3.48 The overall significant effects for Plan A for SEA Objective 20 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 21 - To avoid negative effects on built assets and infrastructure (including green infrastructure)

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

7.3.49 The overall significant effects for Plan A for SEA Objective 21 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.3.50 The absence of eight supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan A.

7.4 Plan C

7.4.1 The development of Plan C is discussed in rdWRMP24's Decision Making Report technical supporting document. Plan C is a least cost model run based on the preferred most likely scenario, which is the same scenario as Plan B (Best Value Plan). This scenario has been shaped by customer and stakeholder engagement.

7.4.2 Policy decisions applicable to Plan C are:

- Environmental destination and Ambition: achieving BAU+ environmental destination starting in 2036 and profiled over time by prioritising the most sensitive areas in the Anglian Water region, with delivery completed in 2040. This approach enables the latter part of Plan C's delivery to be adaptable based on the outcome of the WINEP investigations.
- 1 in 500 year drought resilience is achieved by 2040, a delay of one year beyond target delivery, as earlier surplus is used in the early delivery of BAU+, as above.
- Demand management applies the Aspirational portfolio.
- The timing of licence capping – scenario 8 is delivered, which means in the WRMP24 period existing public water supply licences that are time limited are capped at recent actual average in 2030, with Anglian Water's permanent licences being capped in a phased approach between 2030 and 2036.

7.4.3 In addition, it should be noted that the programme of river support and restoration projects identified by the separate WINEP process for AMP8 (known as WINEP options) are the same in all the alternative plans.

7.4.4 The supply-side options selected in Plan C are set out in Table 7.2 below.

Table 7.2: Plan C Supply-side options

Ref	Description	Operation Date	Option also selected in Plan B?
CAM4	Ruthamford South to Cambridge Water potable transfer (50 Ml/d)	2030	Yes
LNC25	Lincolnshire East to Lincolnshire Central potable transfer (29 Ml/d)	2030	Yes
EXC3	Essex South to Essex Central potable transfer (10 Ml/d)	2030	Yes
EXC7	Backwash water recovery, Essex Central WTW (0.3 Ml/d)	2030	Yes
FND22	Marham abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039)	2030	Yes
LNC30	Lincolnshire Central WTW Upgrade (3.2 Ml/d)	2030	Yes
LNE11	Lincolnshire East Groundwater (7.5 Ml/d)	2030	Yes
LNE12	Lincolnshire East Surface Water (13 Ml/d before 2039, 7.3 Ml/d after 2039)	2030	Yes
LNN3	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72 Ml/d)	2030	Yes
NAY5	Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	2030	Yes
NBR6	Fenland to Norfolk Bradenham potable transfer (50 Ml/d)	2030	Yes
NEH3	Suffolk Thetford to Norfolk East Harling potable transfer (5 Ml/d)	2031	Yes
NHL4	Norfolk East Harling to Norfolk Harleston potable transfer (5 Ml/d)	2031	Yes
NTB10	Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	2031	Yes
RTS16	Ruthamford South Drought permit (2.07 Ml/d)	2031	Yes
RTS21	Ruthamford South surface water enhancement (9.5 Ml/d up to 2040, 6 Ml/d after 2040)	2031	Yes
SUE23	Suffolk East WTW Upgrade (1.7 Ml/d)	2031	Yes
SUE24	Suffolk Sudbury to East Suffolk potable transfer (10 Ml/d)	2031	Yes
SUT6	Backwash water recovery, Suffolk East WTW (0.05 Ml/d)	2031	Yes
SWC8	Cambridge to Suffolk West Cambs potable transfer (50 Ml/d)	2031	Yes
SWC13	Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	2033	Yes
EXS19	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039)	2033	Yes
SUT5	Norfolk Bradenham to Suffolk Thetford potable transfer (15 Ml/d)	2035	Yes
FND26	Backwash water recovery, Fenland WTW (0.2 Ml/d)	2035	Yes
LNN1	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3 Ml/d)	2036	Yes
NED2	Norfolk Bradenham to Norfolk East Dereham potable transfer (10 Ml/d)	2036	Yes
NNC4	Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	2036	Yes
SHB9	South Humber Bank Non-potable desalination (60 Ml/d)	2037	Yes
FND29	Fens Reservoir 50MCM (usable volume) (44.4 Ml/d)	2037	Yes
EXS10	Holland on Sea desalination (seawater) (26 Ml/d)	2041	Yes
LNB1	Ruthamford North to Bourne potable transfer (20 Ml/d)	2041	Yes
LNC16	Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d)	2041	Yes

Ref	Description	Operation Date	Option also selected in Plan B?
LNC28	Bulk trade agreement - River Trent (7 Ml/d)	2041	Yes
LNE6	Mablethorpe desalination Seawater (50 Ml/d)	2041	Yes
NTB20	Casiter desalination Seawater (25 Ml/d)	2041	**No**
NWY1	Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	2041	Yes
RTN30	Lincolnshire Central to Ruthamford North potable transfer (75 Ml/d)	2041	Yes
RTS24	Ruthamford North to Ruthamford South potable transfer (75 Ml/d)	2041	Yes
RTN17	Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d)	2041	Yes
SUE25	Backwash water recovery, Suffolk East WTW (0.17 Ml/d)	2041	Yes
RTC3	Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	2043	Yes
NBR9	Backwash water recovery, Norfolk Bradenham WTW (0.2 Ml/d)	2050	Yes
NNC5	North Norfolk Coast WTW backwash water recovery (0.18 Ml/d)	2050	Yes
NNC6	North Norfolk Coast WTW backwash water recovery (0.2 Ml/d)	2050	Yes

7.4.5 In total Plan C includes 44 supply-side options, compared to 50 options selected in the preferred plan, Plan B, as set out in Chapter 6, with a summary below.

- One supply-side option appears in Plan C that is not in Plan B, this is: Caister desalination Seawater (25 Ml/d) (NTB20).
- Supply-side options that appear in Plan B that are not in Plan C are: Bacton desalination (seawater) (25 Ml/d) (NTB17), five backwash recovery schemes at WTW : Backwash water recovery, Essex South WTW (0.3Ml/d) (EXS7), Backwash recovery water recovery, Backwash water recovery, Lincolnshire East WTW (1.3Ml/d) (LNE3), Backwash recovery, Norfolk Aylsham WTW (0.75Ml/d) (NAY4), Backwash water recovery, Norfolk East Dereham WTW (0.1Ml/d) (NED3) and Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d) (NHL7) and the transfer Norwich and the Broads to Aylsham potable transfer (3Ml/d) (NAY1).

7.4.6 The SEA's assessment of likely significant effects of rdWRMP24 relates to the environmental consequences (positive or negative) in relation to each SEA Objective. Figure 7.2 presents the SEA findings of Plan C. The top of Figure 7.2 presents the overall assessment rating for each SEA objective as a result of Plan A's construction and operation. The key – explaining the colour coding – helps to indicate where likely significant effects are predicted to result from Plan C and is set out in Table 6.2. The remainder of the Figure portrays the contributing components to Plan C, these are the specific assessment results for the components of the rdWRMP24 that contribute to the delivery of the supply-demand balance across the 25 year planning period (2025-2050). The individual findings for each of the components of the rdWRMP24 can be found in Appendix A (SEA Options Assessment). The assessment findings for all components of Plan C were reviewed and taken into account in identifying, describing and evaluating the likely significant effects of Plan C, as presented at the top of Figure 7.2 and discussed for each SEA objective, below.

7.4.7 As the majority of the components of the Plan C are similar to Plan B, many of the drivers of the significant effects of Plan C are the same or similar to those for Plan B. Therefore, where this is the case, this explanation is not repeated and is as described in the assessment of Plan B.

Figure 7.2: Plan C SEA Findings Matrix

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Plan C SEA Findings (Least Cost Best Value Plan)	**Construction**	**Positive**																					
		Negative																					
	Operation	**Positive**																					
		Negative																					
BAU+ Environment Destination	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Licence Capping	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
1 in 500 year Drought Resilience	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Government Led Interventions	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Leakage	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Non-Household Water Efficiency	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Smart Meters	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Household Water Efficiency	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
CAM4 Ruthamford South to Cambridge Water potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC25 Lincolnshire East to Lincolnshire Central potable transfer (29 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
EXC3 Essex South to Essex Central potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXC7 Backwash water recovery, Essex Central WTW (0.3 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND22 Marham abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC30 Lincolnshire Central WTW Upgrade (3.2 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE11 Lincolnshire East Groundwater (7.5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE12 Lincolnshire East Surface Water (13 Ml/d before 2039, 7.3 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNN3 Lincolnshire Retford and Gainsborough resource optimisation (0.72 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NAY5 Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR6 Fenland to Norfolk Bradenham potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NEH3 Suffolk Thetford to Norfolk East Harling potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NHL4 Norfolk East Harling to Norfolk Harleston potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NTB10 Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS16 Ruthamford South Drought permit (2.07Ml/d) (Winter)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS21 Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE23 Suffolk East groundwater enhancement (1.7Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE24 Suffolk Sudbury to East Suffolk potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT6 Suffolk Thetford WTW backwash water recovery (discharge reduction of 0.05 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC8 Cambridge to Suffolk West Cambs potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC13 Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS19 Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT5 Norfolk Bradenham to Suffolk Thetford potable transfer (15 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND26 Backwash water recovery, Fenland WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
LNN1 Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3.5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NED2 Norfolk Bradenham to Norfolk East Dereham potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC4 Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SHB9 South Humber Bank non-potable desalination (60 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND29 Fens Reservoir 50MCM (usable volume) (44.4Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS10 Holland on Sea desalination (seawater) (25 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNB1 Ruthamford North to Bourne potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC16 Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC28 Bulk trade agreement - River Trent (7 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE6 Mablethorpe desalination Seawater (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NTB20 Caister desalination (Seawater) (25 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NWY1 Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN30 Lincolnshire Central to Ruthamford North potable transfer (75 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS24 Ruthamford North to Ruthamford South potable transfer (75 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN17 Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE25 Backwash water recovery, Suffolk East WTW (0.17 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTC3 Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR9 Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC5 North Norfolk Coast WTW backwash water recovery (0.18 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC6 North Norfolk Coast WTW backwash water recovery (0.2 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
BRETT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
COLNE	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
GIPPING	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
PANT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
STIFFKEY	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

SEA Objective 1 - To protect designated sites and their qualifying features

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Major Positive Effects	Moderate Negative Effects

7.4.8 The overall significant effects for Plan C for SEA Objective 1 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.9 Overall Plan C having examined all the potential construction and operational effects in light of the individual Habitats Site's conservation objectives and at this stage (the plan making stage) taking a precautionary approach to the assessment, it can be concluded that this element of the rdWRMP24 would not give rise to adverse effects on the integrity of individual habitats sites within Plan C, as assessed against the conservation objectives.

SEA Objective 2 - To deliver BNG, protect biodiversity, priority species and vulnerable habitats such as chalk rivers

Construction Effects		Operational Effects	
Neutral	Major Negative Effects	Moderate Positive Effects	Moderate Negative Effects

7.4.10 The overall significant effects for Plan C for SEA Objective 2 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.11 The addition of the Caister desalination Seawater (25 Ml/d) (NTB20) has significant moderate negative effects during the construction stage for Objective 2 as the construction of the intake and outfall pipes from the desalination plant are likely to affect areas supporting marine fisheries. The overall significant negative effects remain as stated.

7.4.12 The absence of six supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan C. Plan B includes more investment in these supply-side water efficiency options and delivers 13 backwash recovery options at existing WTW by 2030, whereas Plan C only includes eight such backwash recovery schemes by 2050, and only three of these by 2030. In comparison to Plan B, Plan C's approach would only deliver a tenth of the efficiency savings from such schemes by 2030 (~0.5Ml/d) and only 30% of these savings by the end of rdWRMP24 (2050).

7.4.13 **Additional mitigation**: The Biodiversity Roadmap, set out in Section 4.4 of the rdWRMP24 sub-report C - *Biodiversity Net Gain and Natural Capital Assessment* provides a clear basis for Plan B to contribute to Anglian Water's developing Corporate Strategy on BNG. It is clear that the development of this corporate strategy, provides the basis to help avoid, and where practicable, reduce the loss of habitat in Plan Cs implementation, and to respond to any remaining on-site losses with the delivery of BNG in the local area, or at strategic sites. **The outcome of which has the potential to remove Plan C's significant negative construction effect and result in a minor rating for the Plan's construction negative findings.**

SEA Objective 3 - To avoid spreading and, where required, manage invasive and non-native species (INNS)

Construction Effects	Operational Effects

Neutral	**Neutral**	**Neutral**	**Minor Negative Effects**

7.4.14 The overall significant effects for Plan C for SEA Objective 3 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 4 - To meet WFD objectives relating to biodiversity

Construction Effects		Operational Effects	
Neutral	**Moderate Negative Effects**	**Major Positive Effects**	**Minor Negative Effects**

7.4.15 The overall significant effects for Plan C for SEA Objective 4 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.16 No significant negative effects for the operational stage identified for Plan B overall.

7.4.17 The WFD assessment concluded that in Plan C there were no options identified with risk of non-compliance with WFD.

7.4.18 The absence of six supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan C. Plan B includes more investment in these supply-side water efficiency options and delivers 13 backwash recovery options at existing WTW by 2030, whereas Plan C only includes seven such backwash recovery schemes by 2050, and only three of these by 2030. In comparison to Plan B, Plan C's approach would only deliver a tenth of the efficiency savings by 2030 (~0.5Ml/d) and only 30% of these savings by the end of rdWRMP24 (2050).

SEA Objective 5 - To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing

Construction Effects		Operational Effects	
Minor Positive Effects	**Minor Negative Effects**	**Moderate Positive Effects**	**Neutral**

7.4.19 The overall significant effects for Plan C for SEA Objective 5 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.20 The addition of the Caister desalination Seawater (25 Ml/d) (NTB20) has localised significant moderate negative effects during construction due to the option intersecting three noise action important areas and the potential for direct losses from community assets. The overall significant negative effects however remain as stated.

SEA Objective 6 - To secure resilient water supplies for the health and wellbeing of customers

Construction Effects		Operational Effects	
Neutral	**Neutral**	**Major Positive Effects**	**Neutral**

7.4.21 The overall significant effects for Plan C for SEA Objective 6 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 7 - To increase access and connect customers to the natural environment, provide education or information resources for the public

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.4.22 The overall significant effects for Plan C for SEA Objective 7 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 8 - To maintain and enhance tourism and recreation

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Moderate Positive Effects	Neutral

7.4.23 The overall significant effects for Plan C for SEA Objective 8 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 9 - To reduce or manage flood risk, taking climate change into account

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Neutral

7.4.24 The overall significant effects for Plan C for SEA Objective 9 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.25 The addition of the Caister desalination Seawater (25 Ml/d) (NTB20) has localised significant moderate negative effects during construction due to the transfer pipeline being located within Flood Zones 2 and 3. This option also contributes localised significant moderate negative effects during operation. As with Plan B, the phasing of these supply-side options reduces the potential impact of this effect. The overall negative significant effects remain as stated.

SEA Objective 10 - To enhance or maintain surface water quality, flows and quantity

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.4.26 The overall significant effects for Plan C for SEA Objective 10 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.27 The absence of six supply-side options compared to Plan C means that localised effects related to those options do not apply in Plan C.

SEA Objective 11 - To enhance or maintain groundwater quality and resources

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.4.28 The overall significant effects for Plan C for SEA Objective 11 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.29 The absence of six supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan C.

SEA Objective 12 - To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.4.30 The overall significant effects for Plan C for SEA Objective 12 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.31 The absence of six supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan C.

SEA Objective 13 - To increase water efficiency and increase resilience of water supplies and natural systems to drought

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.4.32 The overall significant effects for Plan C for SEA Objective 13 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.33 The addition of the Caister desalination Seawater (25 Ml/d) (NTB20) contributes further significant moderate positive operational effects on water supply resilience due to decreasing the reliance on freshwater sources.

7.4.34 The absence of six supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan C. Plan B includes more investment in these supply-side water efficiency options and delivers 13 backwash recovery options at existing WTW by 2030, whereas Plan C only includes seven such backwash recovery schemes by 2050, and only three of these by 2030. In comparison to Plan B, Plan C's approach would only deliver a tenth of the efficiency savings by 2030 (~0.5Ml/d) and only 30% of these savings by the end of rdWRMP24 (2050).

SEA Objective 14 - To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Minor Positive Effects	Neutral

7.4.35 The overall significant effects for Plan C for SEA Objective 14 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 15 - To reduce and minimise air emissions during construction and operation

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Minor Negative Effects

7.4.36 The overall significant effects for Plan C for SEA Objective 15 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 16 - To minimise/reduce embodied and operational carbon emissions

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Neutral	Moderate Negative Effects

7.4.37 The overall significant effects for Plan A for SEA Objective 16 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.38 The addition of the Caister desalination Seawater (25 Ml/d) (NTB20) has localised significant moderate negative effects in construction and operation due to the high levels of resource use and emissions released during the energy intensive processes required to allow new infrastructure to function and supply ‘new water’. The overall negative effects remain as stated.

SEA Objective 17 - To introduce climate mitigation where required and improve the climate resilience of assets and natural systems

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.4.39 The overall significant effects for Plan C for SEA Objective 17 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 18 - To conserve/protect and enhance the historic environment including the significance of designated and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting

Construction Effects		Operational Effects	
Neutral	Minor Negative Effect	Neutral	Neutral

7.4.40 The overall significant effects for Plan C for SEA Objective 18 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.41 The absence of six supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan C.

SEA Objective 19 - To conserve, protect and enhance landscape and townscape character and visual amenity

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Moderate Positive Effects	Neutral

7.4.42 The overall significant effects for Plan C for SEA Objective 19 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.43 The absence of six supply-side options compared to Plan B means that localised effects related to those options do not apply in Plan C.

SEA Objective 20 - To minimise resource use and waste production

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Neutral

7.4.44 The overall significant effects for Plan C for SEA Objective 20 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.4.45 The addition of the Caister desalination Seawater (25 Ml/d) (NTB20) has significant (moderate) negative effects identified for that individual option due to the significant material use and waste generation associated with the construction of large-scale infrastructure. This does not impact the overall effects stated.

SEA Objective 21 - To avoid negative effects on built assets and infrastructure (including green infrastructure)

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Neutral

7.4.46 The overall significant effects for Plan C for SEA Objective 21 are set out above. The drivers of the effects are the same as those described for Plan B and are not repeated here.

7.5 Plan D

7.5.1 The development of Plan D is discussed in rdWRMP24's Decision Making Report technical supporting document. Plan D is based on the best for environment (abstraction) scenario, which is different to all the other Plans.

7.5.2 The largest level of environmental destination reductions based on the Enhance scenario are met as early as possible within the planning period. This prevents the ability for the plan to be adjusted to suit the outcomes from WINEP investigations.

7.5.3 The policy decisions that contribute to the supply and demand forecast and are applicable to Plan D are:

- Environmental destination: achieving 'Enhance' environmental destination starting in 2036 and profiled over time by prioritising the most sensitive areas in the Anglian Water region and protecting 'uneconomic' water bodies.
- 1 in 500 year drought resilience is achieved by 2039.
- Demand management applies the Aspirational portfolio.
- The timing of licence capping – reducing the cap on abstraction is phased, capping at maximum peak in 2025 and then capping at recent actual average in 2036.

7.5.4 In addition, it should be noted that the programme of river support and restoration projects identified by the separate WINEP process for AMP8 (known as WINEP options) are the same in all the alternative plans.

7.5.5 The supply-side options selected in Plan D are set out in Table 7.3 below.

Table 7.3: Plan D Supply-side options

Ref	Description	Operation Date	Option also selected in Plan B?
CAM4	Ruthamford South to Cambridge Water potable transfer (50 Ml/d)	2031	Yes
LNC29	Lincolnshire East to Lincolnshire Central potable transfer (50 Ml/d)	2031	**No**
EXC3	Essex South to Essex Central potable transfer (10 Ml/d)	2031	Yes
EXC7	Backwash water recovery, Essex Central WTW (0.3 Ml/d)	2031	Yes
FND22	Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039)	2031	Yes
LNC30	Lincolnshire Central WTW Upgrade (3.2 Ml/d)	2031	Yes
LNE11	Lincolnshire East Groundwater (7.5 Ml/d)	2031	Yes
LNE12	Lincolnshire East Surface Water (13 Ml/d before 2039, 7.3 Ml/d after 2039)	2031	Yes
LNN3	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72 Ml/d)	2031	Yes
NAY5	Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	2031	Yes
NBR3	Fenland to Norfolk Bradenham potable transfer (20 Ml/d)	2031	**No**
NEH1	Norfolk Harleston to Norfolk East Harling potable transfer (5 Ml/d)	2031	**No**
NHL2	Norwich and the Broads to Norfolk Harleston potable transfer (10 Ml/d)	2031	**No**
NTB10	Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	2031	Yes
RTS16	Ruthamford South Drought permit (2.07 Ml/d)	2031	Yes
RTS21	Ruthamford South surface water enhancement (9.5 Ml/d up to 2040, 6 Ml/d after 2040)	2031	Yes
SUE23	Suffolk East WTW Upgrade (1.7 Ml/d)	2031	Yes
SUE24	Suffolk Sudbury to East Suffolk potable transfer (10 Ml/d)	2031	Yes
SWC8	Cambridge to Suffolk West Cambs potable transfer (50Ml/d)	2031	Yes
SWC13	Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	2033	Yes
SUE1	Ipswich Cliff Quay direct to Alton Reservoir (with additional abstraction and treatment at Alton)	2036	**No**

Ref	Description	Operation Date	Option also selected in Plan B?
LNN2	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (10 Ml/d)	2036	**No**
NED1	Norfolk Bradenham to Norfolk East Dereham potable transfer (5 Ml/d)	2036	**No**
NNC4	Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	2037	Yes
EXS22	Colchester water reuse (5.7 Ml/d)	2037	**No**
EXS7	Backwash water recovery, Essex South WTW (0.3 Ml/d)	2037	Yes
EXS10	Holland on Sea desalination (seawater) (26 Ml/d)	2037	Yes
EXS16	Suffolk East to Essex South potable transfer (10 Ml/d)	2037	**No**
FND26	Backwash water recovery, Fenland WTW (0.2 Ml/d)	2037	Yes
FND3	Kings Lynn water reuse (17.4 Ml/d)	2037	**No**
LNB1	Ruthamford North to Bourne potable transfer (20 Ml/d)	2037	Yes
LNC17	Lincolnshire East to Lincolnshire Central potable transfer (100 Ml/d)	2037	**No**
LNC16	Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d)	2037	Yes
LNC28	Bulk trade agreement - River Trent (7 Ml/d)	2037	Yes
LNE7	Mablethorpe desalination Seawater (100 Ml/d)	2037	**No**
NAY3	Norwich and the Broads to Aylsham potable transfer (10 Ml/d)	2037	**No**
NBR9	Backwash water recovery, Norfolk Bradenham WTW (0.2 Ml/d)	2037	Yes
NNC3	Norfolk Aylsham to North Norfolk Coast potable transfer (10 Ml/d)	2037	**No**
NNC6	North Norfolk Coast WTW backwash water recovery (0.2Ml/d)	2037	Yes
NTB30	Bacton desalination Seawater (10 Ml/d)	2037	**No**
NTB21	Caister desalination Seawater (50 Ml/d)	2037	**No**
NWY1	Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	2037	Yes
RTS23	Ruthamford North to Ruthamford South potable transfer (60 Ml/d)	2037	**No**
SHB9	South Humber Bank Non-potable desalination (60 Ml/d)	2037	Yes
FND29	Fens Reservoir 50MCM (usable volume) (44.4 Ml/d)	2037	Yes
FND15	Suffolk West Cambs to Fenland potable transfer (20 Ml/d)	2037	**No**
RTN22	Fenland to Ruthamford North potable transfer (100 Ml/d)	2037	**No**
SUE16	Sizewell desalination (seawater) (100 Ml/d)	2037	**No**
SUT1	Norfolk East Harling to Suffolk Thetford potable transfer (5 Ml/d)	2037	**No**
SUT6	Backwash water recovery, Suffolk East WTW (0.05 Ml/d)	2037	Yes
SWC6	East Suffolk to West Suffolk & Cambs potable transfer (50 Ml/d)	2037	**No**
RTN12	Ruthamford North to Ruthamford North potable transfer (50 Ml/d)	2040	**No**
RTN17	Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d)	2040	Yes
RTC3	Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	2043	Yes

7.5.6 In total the effect of Plan D's policy decisions on the supply demand forecast means that by 2050, more than 200Ml/d of additional deployable output is required to be delivered by new supply-side options. As a result, while Plan D includes 54 supply-side options, compared to 50 in the preferred plan (Plan B, as set out in Chapter 6) there is considerable variation and the total volume of new supply-side water required to be abstracted is significantly higher. It is notable that Plan D contains 33 different options to Plan B, as set out in the Table above:

- Supply-side options that appear in Plan D that are not in Plan B are: Ipswich Cliff Quay direct to Ardleigh Reservoir (with additional abstraction and treatment at Alton) (SUE1) Kings Lynn water reuse (17.4Ml/d) (FND3), Sizewell desalination (seawater) (100Ml/d) (SUE16), Colchester water reuse (5.7 Ml/d) (EXS22), three desalination plant options Mablethorpe desalination Seawater (100Ml/d) (LNE7), Bacton desalination Seawater (10 Ml/d) (NTB30), and Caister desalination Seawater (50 Ml/d) (NTB21), and 16 potable transfers: Lincolnshire East to Lincolnshire Central potable transfer (50Ml/d) (LNC29), Lincolnshire East to Lincolnshire Central potable transfer (100 Ml/d) (LNC17), Fenland to Norfolk Bradenham potable transfer (20 Ml/d) (NBR3), Norfolk Harleston to Norfolk East Harling potable transfer (5Ml/d) (NEH1), Norwich and the Broads to Norfolk Harleston potable transfer (10 Ml/d) (NHL2), Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (10 Ml/d) (LNN2), Norfolk Bradenham to Norfolk East Dereham potable transfer (5 Ml/d) (NED1), Suffolk East to Essex South potable transfer (10 Ml/d) (EXS16), Norwich and the Broads to Aylsham potable transfer (10 Ml/d) (NAY3), Norfolk Aylsham to North Norfolk Coast potable transfer (10 Ml/d) (NNC3), Ruthamford North to Ruthamford South potable transfer (60 Ml/d) (RTS23), Suffolk West Cambs to Fenland potable transfer (20 Ml/d) (FND15), Fenland to Ruthamford North potable transfer (100 Ml/d) (RTN22), Norfolk East Harling to Suffolk Thetford potable transfer (5 Ml/d) (SUT1), East Suffolk to West Suffolk & Cambs potable transfer (50 Ml/d) (SWC6) and Ruthamford North to Ruthamford North potable transfer (50 Ml/d) (RTN12).
- Supply-side options that appear in Plan B that are not in Plan D are: Bacton desalination (seawater) (25 Ml/d) (NTB17), three potable transfers Lincolnshire East to Lincolnshire Central potable transfer (29 Ml/d) (LNC25), Norwich and the Broads to Aylsham potable transfer (3 Ml/d) (NAY1) and Ruthamford North to Ruthamford South potable transfer (75 Ml/d) (RTS24), and six backwash recovery options North Norfolk Coast WTW backwash recovery (0.18 Ml/d) (NNC5), Backwash recovery, Lincolnshire East WTW (1.3 Ml/d) (LNE3), Backwash water recovery, Norfolk Aylsham WTW (0.75 Ml/d) (NAY4), Backwash water recovery, Norfolk East Dereham WTW (0.1 Ml/d) (NED3), Backwash recovery, Norfolk Harleston WTW (0.2 Ml/d) (NHL7) and Backwash water recovery, Suffolk East WTW (0.17 Ml/d) (SUE25).

7.5.7 The SEA's assessment of likely significant effects of rdWRMP24 relates to the environmental consequences (positive or negative) in relation to each SEA Objective. Figure 7.3 presents the SEA findings of Plan D. The top of Figure 7.3 presents the overall assessment rating for each SEA objective as a result of Plan D's construction and operation. The key – explaining the colour coding – helps to indicate where likely significant effects are predicted to result from Plan D and is set out in Table 6.2. The remainder of the Figure portrays the contributing components to Plan D, these are the specific assessment results for the components of the rdWRMP24 that contribute to the delivery of the supply-demand balance across the 25 year planning period (2025-2050). The individual findings for each of the components of the rdWRMP24 can be found in Appendix A (SEA Options Assessment). The assessment findings for all components of Plan D were reviewed and taken into account in identifying, describing and evaluating the likely significant effects of Plan D, as presented at the top of Figure 7.3 and discussed for each SEA objective, below.

Where the drivers of the significant effects of Plan D are the same or similar to those for Plan B, this explanation is not repeated and is as described in the assessment of Plan B.

Figure 7.3: Plan D SEA Findings Matrix

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Plan D SEA Findings (Best for Environment)	**Construction**	**Positive**																					
		Negative																					
	Operation	**Positive**																					
		Negative																					
Enhanced Environment Destination	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Licence Capping	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
1 in 500 year Drought Resilience	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Government Led Interventions	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Leakage	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Non-Household Water Efficiency	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Smart Meters	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
Demand Management Option Household Water Efficiency	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
CAM4 Ruthamford South to Cambridge Water potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC29 Lincolnshire East to Lincolnshire Central potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
EXC3 Essex South to Essex Central potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXC7 Backwash water recovery, Essex Central WTW (0.3 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND22 Marham abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC30 Lincolnshire Central WTW Upgrade (3.2 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE11 Lincolnshire East Groundwater (7.5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE12 Lincolnshire East Surface Water (13 Ml/d before 2039, 7.3 Ml/d after 2039)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNN3 Lincolnshire Retford and Gainsborough resource optimisation (0.72 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NAY5 Backwash water recovery, Norfolk Aylsham WTW (0.1 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR3 Fenland to Norfolk Bradenham potable transfer (45 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NEH1 Norfolk Harleston to Norfolk East Harling potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NHL2 Norwich and the Broads to Norfolk Harleston potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NTB10 Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS16 Ruthamford South Drought permit (2.07Ml/d) (Winter)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS21 Ruthamford South surface water enhancement (9.5 Ml/d up to 2040, 6 Ml/d after 2040)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE23 Suffolk East groundwater enhancement (1.7 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE24 Suffolk Sudbury to East Suffolk potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC8 Cambridge to Suffolk West Cambs potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC13 Suffolk West & Cambs groundwater relocation (2.6 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE1 Ipswich Cliff Quay direct to Alton Reservoir (with additional abstraction and treatment at Alton)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNN2 Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NED1 Norfolk Bradenham to Norfolk East Dereham potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC4 Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
EXS22 Colchester water reuse (5.7Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS7 Backwash water recovery, Essex South WTW (0.3Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS10 Holland on Sea desalination (seawater) (25 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
EXS16 Suffolk East to Essex South potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND26 Backwash water recovery, Fenland WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND3 Kings Lynn water reuse (17.4Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNB1 Ruthamford North to Bourne potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC17 Lincolnshire Central to Lincolnshire Central potable transfer (100 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC16 Ruthamford North to Lincolnshire Central potable transfer (20Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNC28 Bulk trade agreement - River Trent (7 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
LNE7 Mablethorpe desalination Seawater (100 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
NAY3 Norwich and the Broads to Aylsham potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NBR9 Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC3 Norfolk Aylsham to North Norfolk Coast potable transfer (10 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NNC6 North Norfolk Coast WTW backwash water recovery (0.2 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NTB30 Bacton sea water desalination (10Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NTB21 Caister desalination Seawater (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
NWY1 Norwich and the Broads to Norfolk Wymondham potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTS23 Ruthamford North to Ruthamford South potable transfer (60 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SHB9 South Humber Bank non-potable desalination (60 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND29 Fens Reservoir 50MCM (usable volume) (44.4Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
FND15 Suffolk West Cambs to Fenland potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
RTN22 Fenland to Ruthamford North potable transfer (100 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUE16 Sizewell desalination (seawater) (100 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT1 Norfolk East Harling to Suffolk Thetford potable transfer (5 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SUT6 Backwash water recovery, Suffolk East WTW (0.05Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
SWC6 East Suffolk to Cambs and West Suffolk potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN12 Lincolnshire Central to Ruthamford North potable transfer (50 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTN17 Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
RTC3 Ruthamford South to Ruthamford Central potable transfer (20 Ml/d)	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

			Biodiversity				Population and Human Health				Water					Soil	Air	Climatic Factors		Historic Environment	Landscape	Material Assets	
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
BRETT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
COLNE	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
GIPPING	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
PANT	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					
STIFFKEY	Construction	Positive																					
		Negative																					
	Operation	Positive																					
		Negative																					

SEA Objective 1 - To protect designated sites and their qualifying features

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Major Positive Effects	Moderate Negative Effects

7.5.8 Having examined all the potential construction and operational effects in light of the individual Habitats Site's conservation objectives and at this stage (the plan making stage) taking a precautionary approach to the assessment, for Plan D, it can be concluded that this element of the rdWRMP24 would not give rise to adverse effects on the integrity of individual habitats sites within Plan B, as assessed against the conservation objectives.

7.5.9 While it is accepted that further information and study is required to inform a re-assessment at the detailed project stage, it is anticipated that this additional information will allow a conclusion that in assessing the detailed design proposals (at the appropriate time), would not result in an adverse effect on the integrity of individual habitats sites.

7.5.10 The drivers of the significant construction and operational effects for Plan D differ in comparison to Plan B. Options that are in Plan D, and not in Plan B, which have significant (moderate) negative effects identified for both construction and operation phases are; EXS22, LNE7 and NTB30. Colchester water reuse (5.7 Ml/d) (EXS22) directly intersects Blackwater, Crouch, Roach and Colne Estuaries MCZ. Mablethorpe desalination Seawater (100 Ml/d) (LNE7) includes the construction of a desalination plant within Saltfleetby-Theddlethorpe Dunes SSSI and Bacton desalination Seawater (10 Ml/d) (NTB30) directly intersects Cromer Shoal Chalk Beds MCZ. The major reservoir projects (Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29)) will have the same consequences to the environment, as described under Plan B's assessment of this objective and are detailed – alongside all Plan D's components – in Appendix A of this report.

SEA Objective 2 - To deliver BNG, protect biodiversity, priority species and vulnerable habitats such as chalk rivers

Construction Effects		Operational Effects	
Neutral	Major Negative Effects	Major Positive Effects	Moderate Negative Effects

7.5.11 The overall effects identified for Plan D are the same as those identified and described in relation to Plan B. The location and drivers of specific significant effects differ between the two plans. For example significant (major) negative effects identified for the construction stage are driven for Plan D by: Colchester water reuse (5.7Ml/d) (EXS22) identified significant (major) negative effects due to a localised BNG loss of -27.46%, further information can be found in sub-report C - *Biodiversity Net Gain and Natural Capital Assessment*.

The significant positive effects for Plan D are evaluated as a major effect, as opposed to moderate in Plans A-C, for the operational stage. The driver is Plan D's implementation of the Enhance environmental destination scenario, which delivers more than 100Ml/d back into the environment from existing public water supplied, than the BAU+ scenario. This water will offer further protection – beyond BAU+ benefits previously described in Chapter 5 and 2.3 and 2.4 above - for chalk streams, sensitive headwater and SSSIs.

7.5.12 The drivers of significant (moderate) negative effects identified for the operational stage for Plan D are for example: Mablethorpe desalination Seawater (100 Ml/d) (LNE7), Bacton desalination Seawater (10 Ml/d) (NTB30), and Caister desalination Seawater (50 Ml/d) (NTB21) due to localised BNG losses.

7.5.13 **Additional mitigation**: The Biodiversity Roadmap, set out in Section 4.4 of the rdWRMP24 sub-report C - *Biodiversity Net Gain and Natural Capital Assessment* provides a clear basis for

Plan B to contribute to Anglian Water's developing Corporate Strategy on BNG. It is clear that the development of this corporate strategy, provides the basis to help avoid, and where practicable, reduce the loss of habitat in Plan D's implementation, and to respond to any remaining on-site losses with the delivery of BNG in the local area, or at strategic sites. **The outcome of which has the potential to remove Plan D's significant negative construction effect and result in a minor rating for the Plan's construction negative findings.**

SEA Objective 3 - To avoid spreading and, where required, manage invasive and non-native species (INNS)

Construction Effects		Operational Effects	
Neutral	Neutral	Neutral	Minor Negative Effects

7.5.14 The overall significant effects for Plan D for SEA Objective 3 are set out above. The main drivers of the effects are the same as those described for Plan B and are not repeated here.

SEA Objective 4 - To meet WFD objectives relating to biodiversity

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.5.15 The overall significant effects for Plan D for SEA Objective 4 are set out above. The main drivers of the construction effects are the same as those described for Plan B and are not repeated here.

7.5.16 The operational stage identified significant (major) positive effects; this is the same level of effect as identified for Plan B. However, in comparison to Plan B, Plan D uses the Enhance environmental destination - discussed under SEA Objective 2, above - which aims to improve all water bodies (including uneconomic) to 'Good Ecological Status' including those linked to European designated sites. Therefore, major positive effects are identified with benefits to WFD objectives in relation to biodiversity.

7.5.17 No significant negative effects for the operational stage identified for Plan D overall.

7.5.18 The WFD assessment concluded that in Plan D there were no options identified with risk of non-compliance with WFD.

SEA Objective 5 - To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing

Construction Effects		Operational Effects	
Minor Positive Effects	Minor Negative Effects	Moderate Positive Effects	Neutral

7.5.19 The overall effects for Plan D for SEA Objective 5 are set out above. The main drivers of the effects are the same as those described for Plan B and are not repeated here.

7.5.20 The operational stage identified significant (moderate) positive effects, this is driven by the WINEP options and demand management options. For example, the demand management option of Household Water Efficiency is identified for significant (major) positive effects, specific to this option, due to the increased awareness of water efficiency saving measures. The WINEP option Stiffkey is identified for significant (moderate) positive effects due to mitigation against excessive water resource use hence helping to preserve the wellbeing of the community.

SEA Objective 6 - To secure resilient water supplies for the health and wellbeing of customers

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.5.21 The overall effects identified for Plan D for SEA Objective 6 are set out above. The main drivers of the effects, which are not significant, are similar to those described for Plan B and are not repeated here.

7.5.22 The significant (major) positive effects identified during the operational stage for Plan D are mainly driven by the 1 in 500 year drought resilience and the demand management options. The 1 in 500 year drought resilience provides positive benefits due to its implementation from 2039 which will secure resilient water supplies for the health and wellbeing of the communities for the whole region in a period of drought. The demand management options also provide benefits including for example; Leakage, which is identified for a significant (moderate) positive effect due to the option keeping more water within the natural environment which will aid achieving the desired demand-supply balance and improve regional level and household level water resilience.

7.5.23 Plan D has the potential to deliver at least 368Ml/d of additional water to the environment through the Enhance environmental destination, Plan D will lead to an increased supply capacity being met earlier within the plan than Plan B (Year 2036 for Plan D in comparison to Year 2040 in Plan B). This is met due to Plan D incorporating four additional supply-side options, earlier within the plan, which generate increased deployable outputs in comparison to the other alternate plans.

SEA Objective 7 - To increase access and connect customers to the natural environment, provide education or information resources for the public

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.5.24 The overall effects identified for Plan D for SEA Objective 7 are set out above. The main drivers of the effects, which are not significant, are similar to those described for Plan B and are not repeated here.

7.5.25 The significant (major) positive effects that are identified for the operational stage are driven by the same as Plan B, with Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) anticipated to deliver significant positive effects, related to connection of customers to the environment. Education programmes associated with the demand management options are also a key driver for the effects envisaged in this objective.

SEA Objective 8 - To maintain and enhance tourism and recreation

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Moderate Positive Effects	Neutral

7.5.26 The overall effects identified for Plan D for SEA Objective 8 are set out above. The main drivers of the effects, which are not significant, are similar to those described for Plan B and are not repeated here.

7.5.27 The significant (moderate) positive effects that are identified for the operational stage are driven by the anticipated benefits from the two reservoir supply-side options (i.e. Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29)). These are the same drivers of significant effect as Plan B with the details of what form the benefits to be developed as the projects progress. Further information on the drivers of this significant effect is outlined in Section 6 of Plan B SEA Objective 8.

SEA Objective 9 - To reduce or manage flood risk, taking climate change into account

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Neutral	Neutral

7.5.28 The overall significant (moderate) negative effect for the construction stage of Plan D in comparison to neutral for Plan B is driven by an additional two desalination options being constructed within Flood Zones 2 and/or 3, potentially placing a considerable proportion of the plans future water supply infrastructure at risk of marine flooding under increasing impacts of climate change.

SEA Objective 10 – To enhance or maintain surface water quality, flows and quantity

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.5.29 The overall effects for Plan D for SEA Objective 10 are set out above. The main drivers of the effects are similar and those that are the same are described for Plan B and are not repeated here.

7.5.30 The significant (major) positive effects identified for the operational stage are driven by the Enhance environmental destination scenario as Plan D will generate 368Ml/d to return to the environment, currently used as public water supply.

7.5.31 No significant negative effects for the operational stage identified for Plan D overall.

7.5.32 The WFD assessment concluded that in Plan D there were no options identified with risk of non-compliance with WFD.

SEA Objective 11 – To enhance or maintain groundwater quality and resources

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.5.33 The overall effects for Plan D for SEA Objective 11 are set out above. The main drivers of the effects are similar and those that are the same as those described for Plan B; as such, the same details are not repeated here.

7.5.34 The significant (major) positive effects identified for the operational stage for Plan D are driven by the Enhance environmental destination scenario. This will positively affect groundwater

quality and resources through considerable reductions to abstractions from groundwater sources, which will benefit groundwater and water bodies connected to them. In addition to this, Plan D will include the delivery of all five demand management options, which make up the Aspirational demand management portfolio. This will contribute to this significant positive effect by reducing demand against the current baseline by over 65Ml/d by 2050. This effectively acts to ensure population growth does not generate increased demand on the region's groundwater resources.

7.5.35 No significant negative effects for the operational stage identified for Plan D overall.

7.5.36 The WFD assessment concluded that in Plan D there were no options identified with risk of non-compliance with WFD.

7.5.37 In addition, Plan D incorporates the use of a far larger option in terms of Mablethorpe desalination Seawater (100 Ml/d)) (LNE7) in comparison to Plan B including Mablethorpe desalination Seawater (50 Ml/d) (LNE6).

SEA Objective 12 – To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Major Positive Effects	Minor Negative Effects

7.5.38 The overall effects for Plan D for SEA Objective 12 are set out above. The main drivers of the effects are similar and those that are the same as those described for Plan B are not repeated here.

7.5.39 The significant (major) positive effects identified for the operational stage for Plan D are driven by the Enhance environmental destination scenario. This is due to the scenario achieving flows to support 'Good Ecological Status' under the WFD, and this being reached by 2036 therefore leading to major benefits upon SEA Objective 12.

7.5.40 No significant negative effects for the operational stage identified for Plan D overall.

7.5.41 The WFD assessment concluded that in Plan D there were no options identified with risk of non-compliance with WFD.

SEA Objective 13 – To increase water efficiency and increase resilience of water supplies and natural systems to drought

Construction Effects		Operational Effects	
Neutral	Neutral	Major Positive Effects	Neutral

7.5.42 The overall effects for Plan D for SEA Objective 13 are set out above. The main drivers of the effects that are the same as those described for Plan B and are not repeated here.

7.5.43 The significant (major) positive effects identified for the operational stage are driven by the delivery of 1 in 500 year drought resilience in 2039 for Plan D, in comparison to 2040 for Plan B. This however contributes to the same level of significant (major) positive effect as Plan B for this objective. Furthermore, for Plan D the Enhance environmental destination scenario is delivered in 2036, this is in comparison to the phased approach for Plan B and the BAU+ environmental destination to be delivered within 2036-2040. This allows Plan D to reach the supply-demand forecast earlier within the plan, however, drives the need for Plan D to incorporate an increased number of supply-side options within the plan compared to Plan B.

SEA Objective 14 – To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Minor Positive Effects	Neutral

7.5.44 The overall effects for Plan D for SEA Objective 14 are set out above. The main drivers of the effects are the same as those described for Plan B and are not repeated here.

7.5.45 The differentiators in options for Plan D in comparison to Plan B do not raise additional significant effects; localised minor effects were identified.

SEA Objective 15 – To reduce and minimise air emissions during construction and operation

Construction Effects		Operational Effects	
Neutral	Minor Negative Effects	Neutral	Minor Negative Effects

7.5.46 The overall effects for Plan D for SEA Objective 14 are set out above. The main drivers of the effects are the same as those described for Plan B and are not repeated here.

7.5.47 The differentiators in options in comparison to Plan B do not raise additional significant effects; localised minor effects were identified.

SEA Objective 16 – To minimise/reduce embodied and operational carbon emissions

Construction Effects		Operational Effects	
Neutral	Moderate Negative Effects	Neutral	Major Negative Effects

7.5.48 The overall effects for Plan D for SEA Objective 16 are set out above. The main drivers of the overall effects that are the same as those described in Plan B are not described here.

7.5.49 The significant (moderate) negative effect identified during the construction phase is driven by Plan D including for example: Holland on Sea desalination (seawater) (26 Ml/d) (EXS10), Mablethorpe desalination Seawater (100 Ml/d) (LNE7) and Bacton desalination Seawater (10 Ml/d) (NTB30) due to resource use and emissions. This level of effect is the same as identified for Plan B.

7.5.50 The significant (major) effect identified for Plan D during the operational stage is driven by Plan D requiring an additional four supply-side options that provide an additional 127 Ml/d of deployable output infrastructure required for the delivery of the Enhance environmental destination scenario (compared to the BAU+ of Plan B). The four additional supply-side options are: Caister desalination Seawater (50 Ml/d) (NTB21), Sizewell desalination (seawater) (100 Ml/d) (SUE16), Kings Lynn water reuse (17.4Ml/d) (FND3) and Ipswich Cliff Quay direct to Alton Reservoir (with additional abstraction and treatment at Alton) (SUE1), and these drive the significant (major) negative effect due to the additional resource use required during the operational stage.

SEA Objective 17 – To introduce climate mitigation where required and improve the climate resilience of assets and natural systems

Construction Effects		Operational Effects	
Neutral	**Neutral**	**Major Positive Effects**	**Neutral**

7.5.51 The overall effects for Plan D for SEA Objective 17 are set out above. The main drivers of the effects are the same as those described for Plan B and are not repeated here.

7.5.52 The significant (major) positive effects identified for the operational stage are driven by licence capping and the demand management options. For Plan D licence capping is identified for significant (major) positive effects due to licence capping of existing Anglian Water abstractions between 2030-2036 which will remove the risk of the related surface and groundwater sources seeing increased abstractions – compared to recent average rates of abstraction. The Enhance environmental destination scenario abstraction reductions will lead to approximately 368Ml/d of water being returned to the environment, which should improve the resilience of natural systems to climate change.

7.5.53 The demand management options including for example: Government Led Interventions and Non-Household Water Efficiency are identified for significant (major) positive effects. Government Led Interventions are identified due to the installation of more water efficient appliances, which will result in more water being kept within the natural environment. Non-Household Water Efficiency is identified due to the implementation of water efficiency best practice across small to large businesses including increased education.

SEA Objective 18 – To conserve/protect and enhance the historic environment including the significance of designated and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

7.5.54 The overall effects for Plan D for SEA Objective 18 are set out above. The main drivers of the effects are the same as those described for Plan B and are not repeated here.

7.5.55 The differentiators in supply-side options compared to Plan B do not raise additional significant effects, localised minor effects were identified.

SEA Objective 19 – To conserve, protect and enhance landscape and townscape character and visual amenity

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Moderate Positive Effects**	**Neutral**

7.5.56 The overall effects for Plan D for SEA Objective 19 are set out above. The main drivers of the effects that are the same as those described for Plan B and are not repeated here.

7.5.57 The significant (moderate) positive effects identified for the operational phase are driven by the collective measures that increase the availability of water within the natural environment, with benefits to the natural landscape. Directly, this results from the Enhance environmental destination and licence capping. Indirectly, the five demand management options reduce demand by over 230 Ml/d by 2050. Many of the natural landscapes across Anglian Water's supply area, including those under existing water stress, will benefit. This also provides the platform on which to increase the recovery of natural landscapes, with localised opportunities for

enhancement being identified as part of the project-level interventions (for example, BNG solutions) which also deliver benefit to the environment.

SEA Objective 20 – To minimise resource use and waste production

Construction Effects		Operational Effects	
Neutral	**Moderate Negative Effects**	**Neutral**	**Moderate Negative Effects**

7.5.58 The overall effects for Plan D for SEA Objective 20 are set out above. The main drivers of the effects that are the same as those described for Plan B are not repeated here.

7.5.59 The overall significant (moderate) negative effects identified for both construction and operation stages are in comparison to the minor and neutral effects identified in Plan B, respectively. This is driven by Plan D requiring four additional supply-side options that contribute to the additional 127 Ml/d deployable outputs for the required level to meet supply-demand for Plan D. The four additional options for Plan D of: Caister desalination Seawater (50 Ml/d) (NTB21), Sizewell desalination (seawater) (100 Ml/d) (SUE16), Kings Lynn water reuse (17.4Ml/d) (FND3) and Ipswich Cliff Quay direct to Alton Reservoir (with additional abstraction and treatment at Alton) (SUE1) drive the significant (moderate) negative effects for Plan D overall due to resource use in both the construction and operational stage.

SEA Objective 21 – To avoid negative effects on built assets and infrastructure (including green infrastructure)

Construction Effects		Operational Effects	
Neutral	**Minor Negative Effects**	**Neutral**	**Neutral**

7.5.60 The overall effects for Plan D for SEA Objective 21 are set out above. The main drivers of the effects are the same as those described for Plan B and are not repeated here.

7.5.61 The differentiators in options for Plan D in comparison to Plan B do not raise the level of effect overall for the plan for this objective.

7.6 Comparison of Alternative Plans (A, C and D) with the Preferred Plan (Plan B)

7.6.1 The SEA Findings for Plan B, the BVP, and the three alternative plans (Plans A, C and D) are set out alongside each other in Figure 7.4, below, to enable comparison.

7.6.2 Alternative plans A and C have the same overall findings across the SEA objectives as Plan B, although details of the timings and location of some effects that would result from them would of course be different, as discussed in Sections 7.3 and 7.4. This is not a surprising result as policy decisions, including detail on demand management options, that form the basis of many of the Plan's positive effects are very similar as any Plan developed for WRMP24 would be required to deliver licence capping, 1 in 500 year drought resilience and environmental destination. Plan A is based on the initial supply demand forecast scenario, with supply-side options generated on a least cost basis, with Plan C using the same least cost approach, but derived from modification from that initial scenario to optimise it based on the best value planning objectives. Plan B's variation to these two alternative Plan's is driven by its supply-side options selection being directed by best value planning approach, which optimises on factors beyond least cost, including: the metrics derived from the environmental assessment and customer preferences amongst other things (Figure 2.3).

7.6.3 Plan D is based on a key difference in one policy decision – environmental destination – moving from delivery of BAU+ (as is the case for Plan B and the alternative plans A and C) to Enhance, which drives a substantial increase in the scale of new supply required across the planning period, approximately 200Ml/d more in 2050 than each of Plans A, B and C. The detail of the supply-side options selected changes – with 33 of 54 supply options being different between plans B and D – but this does not change the types of supply schemes that are being selected, it just increases future volumes of water required and the number and location of sites selected. As such, the overall types of environmental risks, and the significance remains similar to Plan B, although across a wider range of specific geographic locations, where additional sites for new infrastructure are selected. The SEA Objective ratings for Plan D overall identified a number of Objectives that scored more significant effects for Plan D than Plan B, for example: SEA Objective 9 (water) scored moderate negative effects during the construction phase in comparison to neutral for Plan B, SEA Objective 16 (climatic factors) scored major negative effects for the operational phase for Plan D in comparison to moderate negative effects in Plan B and Plan D scored moderate negative effects during both the construction and operational phases for SEA Objective 20 (material assets) in comparison to minor negative and neutral for Plan B respectively.

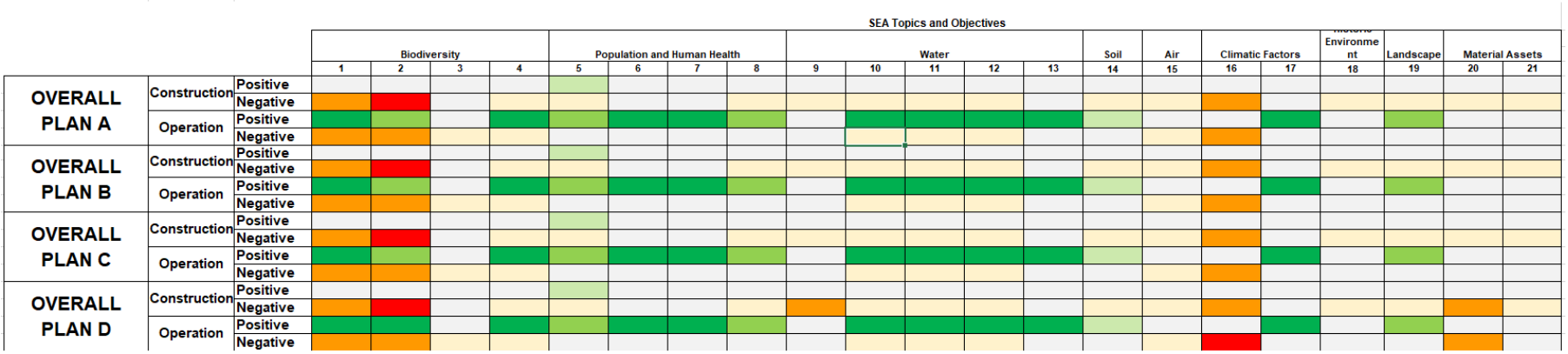
7.6.4 Descriptions of the key differences between Plan B and each of the in the four plans (A, C and D) are presented below.

7.6.5 **Comparison of the preferred plan (Plan B) with Plan A:** The overall significant positive operational effects for both plans are driven by the benefits to the water environment from the environmental destination scenario (BAU+) and licence capping. However, there are differences in the timing and delivery of these; Plan A delivers BAU+ earlier and Plan B delivers licence capping earlier.

7.6.6 Plan A delivers the same volume of cap reductions, but does not deliver capping of existing permanent licences to recent actual average until 2036. Plan B, however, has been optimised to bring forward a large number of small-scale new supply-side options (31 schemes by 2030/31 in Plan B vs 19 in Plan A). This allows Plan B to deliver this capping far closer to statutory targets, with over 50% of the caps being delivered by 2032/33. The consequence of this phasing of licence capping in Plan B, does mean it delivers drought resilience a year later than Plan A, which delivers 1 in 500 year drought resilience in 2039. This one year difference is not considered to constitute a significant difference in the SEA performance of the Plans.

Plan A delivers the same BAU+ but brings larger volumes a little earlier than Plan B; during the period while both phase in the delivery of environmental destination between the years 2036 - 2040. This early commitment to BAU+, however, requires Plan A to make an earlier commitment to both desalination and an additional reuse scheme - to become operational by 2036 - rather than implementing similar desalination led solutions in 2040.

Figure 7.4: SEA Findings Matrix – Plans A, B, C and D



7.6.7 The early commitment to larger volumes of BAU+ delivery in Plan A also means – if it were to be implemented – it would be far less adaptable than Plan B, whose timing of later public water supply-side desalination options means they can be informed by the outcome of the WINEP investigations. This multi-stakeholder investigative work is intended to ultimately determine the scale of environmental destination reductions required and will inform the WRMP29 round of plan making. Therefore, Plan B enables the rdWRMP24 to be adaptable to possible shifts that could lead environmental destination licence reductions closer to either BAU or Enhance. It also delays the building of two energy and resource intensive supply-side assets with related climate and material assets risk by five years, which provides Anglian Water with more opportunity to benefit from future advances in the efficiency and sustainability performance of desalination technology.

7.6.8 The BNG findings for Plan A identified a habitat units change of 0.86% and a river units change of -13.55%. The Biodiversity Roadmap is set out in Section 4.4 of the rdWRMP24 sub-report C - *Biodiversity Net Gain and Natural Capital Assessment*. Application of the BNG Roadmap to Plan A would help Anglian Water achieve and exceed the mandatory 10% BNG.

7.6.9 **Comparison of the preferred plan (Plan B) with Plan C**: The two plans are based on exactly the same policy decisions and thus they have the same scenario for supply and demand, therefore there are no differences in the policy decisions of the two plans, or the demand management options (as both apply those within the Aspirational portfolio). The consideration of cost is a key part of the best value planning framework and therefore the modelling and decision-making process would be expected to select similar supply-side options for the two plans.

7.6.10 The main difference is that Plan C selects Caister desalination Seawater (25 Ml/d) (NTB20) and Plan B selects Bacton desalination (seawater) (25 Ml/d) (NTB17). There are localised differences in the environmental performance of these options, but no differences in the level of significant effect.

7.6.11 From a similar starting point to Plan C, Plan B has been optimised to include more supply-side water efficiency options: Plan B delivers 13 backwash recovery options at existing WTW by 2030 and Plan C only includes seven such backwash recovery schemes by 2050 (and only three of these by 2030). Through these options, Plan B ensures that by 2030 - five years into the plan - approximately 4Ml/d of raw water that Anglian Water already abstracts (for public water supply purposes) is able to be treated and delivered into supply. The alternative is that this water continues to be discharged as a waste stream. The least cost planning approach adopted in Plan C would only deliver a tenth of this efficiency savings by 2030 (~0.5Ml/d) and only 30% of these savings by the end of rdWRMP24 (2050). While this is a modest benefit, compared to the whole scale of rdWRMP24 actions, it will help support the phasing of licence capping reductions between 2030 and 2036, compared to Plan C, which does not benefit from this additional availability of water.

7.6.12 The BNG findings for Plan C identified a habitat units change of -3.19% and a river units change of -13.51%. The Biodiversity Roadmap is set out in Section 4.4 of the rdWRMP24 sub-report C - *Biodiversity Net Gain and Natural Capital Assessment*. Application of the BNG Roadmap to Plan C would help Anglian Water achieve and exceed the mandatory 10% BNG.

7.6.13 **Comparison of the preferred plan (Plan B) with Plan D:** Plan D is based on a different policy decision for environmental destination, the 'Enhance' scenario in 2036. Plan B is based on delivering the BAU+ scenario in a phased approach from 2036-2040. The earlier commitment to achieving a greater ambition for environmental destination, does mean that Plan D delivers improved environmental performance, compared to Plan B, but significant positive effects are achieved for the same group of SEA objectives for both plans.

7.6.14 The timing of the environmental destination scenario is the main influence on the need for Plan D to include additional supply-side infrastructure. Plan D also delivers drought resilience a year earlier than Plan B.

7.6.15 However, the delivery of the Enhance environmental destination and a year earlier drought resilience in Plan D would require approximately 200Ml/d of additional new supply-side capacity to be operational by 2040, than is required to deliver Plan B. This increases both the number and scale of desalination and reuse supply-side options required to deliver Plan D compared to Plan B, which has consequences for the significant negative effects of Plan D, for example SEA Objectives relating to climatic factors and material assets (as a result of additional resource use). Additional locations are also at risk from construction and wider operational effects of these schemes.

7.6.16 The BNG findings for Plan D identified a habitat units change of -0.05% and a river units change of -12.67%. The Biodiversity Roadmap is set out in Section 4.4 of the rdWRMP24 sub-report C - *Biodiversity Net Gain and Natural Capital Assessment*. Application of the BNG Roadmap to Plan D would help Anglian Water achieve and exceed the mandatory 10% BNG.

7.7 Implications of Adaptive Pathways

7.7.1 The rdWRMP24 plan-making has to deal with significant uncertainty related to the scale and location of reductions related to environmental destination, the deliverability of complex supply-side options (including the SROs) and reliance on forecast benefits from behavioural changes that result from interventions to reduce demand. To address these uncertainties and test the rdWRMP24's ability to respond Anglian Water have produced an adaptive pathway. For the purposes of SEA, this is not considered to be a 'reasonable alternative' as the adaptive pathways represent the implementation phase of the plan (and therefore could apply to any plan that was selected).

7.7.2 Anglian Water has developed an adaptive version of Plan B (see in Chapter 5), which comprises a core pathway element, described below, which ensures that adaptation occurs from the same basis of initial supply-side infrastructure investments that are committed to in the initial five-year period of rdWRMP24 (2025-2030). The first adaptive pathway (Pathway 1) is identical to Plan B, as it acts as the baseline / comparator against which the Plan's response to other uncertainties can be judged. The adaptive planning process therefore involves a component of Plan B being altered (e.g. a supply-side option being delayed, demand management being less effective than anticipated) and understanding how the existing detail of Plan B then changes in response. The adaptive pathways are defined, and their related SEA findings presented below. Further details on this process and its role in the development of rdWRMP24 are contained in the Decision Making Report technical supporting document.

7.7.3 The elements that make up the core pathway of the BVP, as set out below, stay the same in all cases. The core pathway consists of the no-and-low-regret investments needed to commit to in AMP8 (2025-2030), which includes the SROs due to the length of time to plan, design and construct them.

7.7.4 The core pathway includes:

- Transfers needed in AMP8 to connect water resource zones to the rdWRMP24 interconnectors.
- Options where Anglian will make upgrades/improvements to maximise output from existing resources.
- Water reuse scheme required in early AMP9 (Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19), but

development/design must start in AMP8 approved as part of the Accelerated Infrastructure Development programme.

- The two SROs, Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) and Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17). These investments are also required in all the stress testing scenario including the Ofwat reference scenarios.

7.7.5 The other schemes within the BVP (as presented in Section 6.2) are considered part of the adaptive pathway for the preferred plan (known as Pathway 1).

7.7.6 Anglian Water have identified nine scenarios which could trigger an alternative adaptive pathway to their preferred plan, these are related to the following risks: to late delivery of key schemes, options do not provide expected benefits or forecast assumptions change. The scenarios that define the 9 alternative adaptive plans to the BVP are as follows:

Delivery risks

- Pathway 2: Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) is delivered later than planned
- Pathway 3: The Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) is delivered later than planned
- Pathway 4: The interconnectors between Ruthamford South and Suffolk West Cambs (via Cambridge Water) is later than planned (Ruthamford South to Cambridge Water potable transfer (50 Ml/d) (CAM4) and Cambridge to Suffolk West Cambs potable transfer (50Ml/d) (SWC8))
- Pathway 5: The interconnectors to Norfolk are later than planned (Fenland to Norfolk Bradenham potable transfer (50 Ml/d) (NBR6), Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d) (NTB10))
- Pathway 6: Marham abstraction is deemed unfeasible (Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039) (FND22))
- Pathway 7: Suffolk West Cambs WRZ groundwater is deemed unfeasible (Suffolk West & Cambs groundwater relocation (2.6Ml/d) (SWC13))

Risks that demand management is less beneficial than assumed

- Pathway 8: Demand management portfolio does not deliver the benefits assumed for behavioural changes resulting from smart metering and Government interventions

Changes to scale of environmental destination from WINEP investigations

- Pathway 9: Change to deliver BAU scenario
- Pathway 10: Change to deliver Enhance scenario

7.7.7 Note: The content of the BVP that is not part of the core pathway, discussed above, is itself considered an adaptive pathway and named Pathway 1, thus other rdWRMP24 documents may refer to 10 adaptive pathways (the BVP + the nine assessed below). Pathway 1 is not assessed separately here as the plan that results from it and its likely significant effects are the same as the effects of Plan B, the findings of which have already been presented and explored in Chapter 6.

7.7.8 The SEA process considers the likely significant effects that will occur to the environment from implementation of rdWRMP24 as a whole. As such, the assessment of the adaptive pathways – that respond to the scenarios above – present the predicted change in significant effects in comparison to SEA findings for Plan B, as presented in Chapter 6.

7.7.9 The findings of the assessment of the nine adaptive pathways are set out below. In each case the assessment presents:

- The pathway number and title, aligned to those discussed in rdWRMP24 and, in particular, the adaptive pathway Section of the rdWRMP24 Decision Making Report technical supporting document;
- A description of the key changes, from the BVP approach, that result as a response to the pathway (e.g. a change in the date when new supply option is needed, the removal / addition of a supply option)
- The SEA findings, which cover commentary on details resulting from the changes required to address the adaptive pathway's scenario and conclusions on the resultant influence this has been evaluated to have on the rdWRMP24's likely significant effects on the SEA Objectives.

Assessment Findings of Adaptive Pathways related to Delivery Risks

Table 7.4: SEA Findings: Adaptive Pathways – Delivery Risks

Pathway	Description	SEA Findings
Pathway 2 The Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) is delivered later than planned	If Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) is two years later than planned, Bacton desalination (seawater) (25 Ml/d) (NTB17) will need to be delivered four years earlier. This does not require the desalination plan to alter capacity. In addition this does not mean that Bacton desalination (seawater) (25 Ml/d) NTB17) is a reasonable alternative to Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) and does not replace the need for the SRO but rather that Bacton desalination (seawater) (25 Ml/d) (NTB17) would be brought forward within the plan.	Construction effects from Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) would last longer and operational benefits would be delayed. Construction of Bacton desalination (seawater) (25 Ml/d) (NTB17) earlier in the plan introduces the predicted environmental effects earlier than in BVP, however this will be limited to the same locations as identified in the BVP. **There is no change to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**
Pathway 3 The Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) is delivered later than planned	In this scenario the Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) is not available until 2042, two years later than planned. This would result in pushing back the implementation of the 1 in 500 year drought resilience by two years and delay the equivalent volume of environmental destination by two years.	Construction effects from Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) would last longer and operational benefits would be delayed. No changes are generated to the supply infrastructure, however the benefits of 1 in 500 year drought resilience and the component of BAU+ environmental destination are delayed by two years. This will be limited to the same locations as identified in the BVP. **There is no change to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**
Pathway 4 The interconnector between Ruthamford South and Suffolk West Cambs (via Cambridge Water) is later than planned (Ruthamford South to Cambridge Water potable transfer (50 Ml/d) (CAM4),	The delay creates a residual deficit which would require an adjustment to time limited licence caps (23 Ml/d).	The 1-year delay to delivery of these transfers (Ruthamford South to Cambridge Water potable transfer (50 Ml/d) (CAM4), Cambridge to Suffolk West Cambs potable transfer (50 Ml/d) (SWC8)) will extend their related construction impacts. No new supply options are required, however licence capping related to sustainability reductions would need to be delayed by

Pathway	Description	SEA Findings
Cambridge to Suffolk West Cambs potable transfer (50 Ml/d) (SWC8))		one year (23 Ml/d). This may require OPI in relation to the specific licences that would be delayed. **There is no change to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**
Pathway 5 The interconnectors to Norfolk are later than planned (Fenland to Norfolk Bradenham potable transfer (50 Ml/d) (NBR6), Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d) (NTB10))	The delay creates a residual deficit which would require an adjustment to time limited licence caps (17 Ml/d).	The 1-year delay to delivery of these transfers (Fenland to Norfolk Bradenham potable transfer (50 Ml/d) (NBR6), Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d) (NTB10)) will extend their related construction impacts. No new supply options are needed, however licence capping related to sustainability reductions would need to be delayed by one year (17 Ml/d). This may require OPI in relation to the specific licences that would be delayed and potentially IROPI related to any licences linked to the Broads (and associated NSN sites). **There is no change to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**
Pathway 6 Marham abstraction is deemed unfeasible (Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039) (FND22))	The capacity of Bacton desalination (seawater) (25 Ml/d) (NTB17) would increase by 10 Ml (to 35 Ml/d) compared to the BVP, and it would be built eight years earlier. In addition, Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) capacity would be increased by 5 Ml (to 30 Ml/d), with no change to delivery date. Time limited licence caps would be delayed by two years.	The construction and operational impacts of Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039) (FND22) would not occur. Licence capping related to sustainability reductions would need to be delayed by two years (7 Ml/d), which may require OPI in relation to the specific licences that would be delayed. Bacton desalination (seawater) (25 Ml/d) (NTB17) would become operational eight years earlier, meaning construction impacts occur earlier in the plan period. The increased capacity of both Bacton desalination (seawater) (25 Ml/d) (NTB17) and Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) could affect the performance of some SEA objectives, however this will be limited to the same locations as identified in the BVP. **There is no change to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**
Pathway 7	Bacton desalination (seawater) (25 Ml/d) (NTB17) capacity would increase by 3 Ml/d (to 28 Ml/d) compared to the BVP. Time	The construction and operational impacts of Suffolk West & Cambs groundwater relocation (2.6 Ml/d) (SWC13) would not

Pathway	Description	SEA Findings
Suffolk West Cambs WRZ groundwater is deemed unfeasible (Suffolk West & Cambs groundwater relocation (2.6 Ml/d) (SWC13))	limited licence caps would be delayed by two years.	occur. Licence capping related to sustainability reductions would need to be delayed by two years (1.4 Ml/d), which may require OPI in relation to the specific licences that would be delayed. The increased capacity of Bacton desalination (seawater) (25 Ml/d) (NTB17) could affect the performance of some SEA objectives, however this will be limited to the same locations as identified in the BVP. **There is no change to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**

Risks that demand management is less beneficial than assumed

Table 7.5: SEA Findings: Adaptive Pathways – Demand Management Risks

Pathway	Description	SEA Findings
Pathway 8 Demand management is less beneficial than assumed	The capacity of Bacton desalination (seawater) (25 Ml/d) (NTB17) would increase by 20 Ml/d (to 45 Ml/d) compared to the BVP and it would be built six years earlier. In addition, Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) capacity would increase by 7 Ml/d (to 32 Ml/d), with delivery four years earlier. Mablethorpe desalination Seawater (50 Ml/d) (LNE6) would have no change to delivery date, but see an increase in capacity of 15 Ml/d, from 50 Ml/d to 65 Ml/d.	Bacton desalination (seawater) (25 Ml/d) (NTB17) would become operational six years earlier and Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) would become operational four years earlier, meaning construction impacts occur earlier in the plan period. The increased capacity of Bacton desalination (seawater) (25 Ml/d) (NTB17), Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) and Mablethorpe desalination Seawater (50 Ml/d) (LNE6) – (42 Ml/d in total) could affect the performance of some SEA objectives, however this will be limited to the same locations as identified in the BVP. **There is no change to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**

Change to scale of environmental destination from WINEP investigations

Table 7.6: SEA Findings: Adaptive Pathways – Change in environmental destination

Pathway	Description	SEA Findings
Pathway 9 Change to deliver BAU Scenario	Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) is no longer required, and Mablethorpe desalination Seawater (50 Ml/d) (LNE6) sees a reduced capacity, down by 50% from 50 Ml/d to 25 Ml/d.	Changing from BAU+ to deliver the BAU scenario would reduce the amount of water returned to the environment. This will have consequences for achieving some of the WFD objectives for water bodies as defined by the latest RBMPs, however prior to the rdWRMP24 WINEP investigation, it is not possible to predict specific locations. **The consequence of this is**

Pathway	Description	SEA Findings
		expected to change the overall performance of SEA Objective 12 (To meet WFD and RBMP Objectives) from Major positive operational to Moderate positive operational. The construction and operational impacts of Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) would not occur. The reduced capacity of Mablethorpe desalination Seawater (50 Ml/d) (LNE6), by half to 25 Ml/d could affect the performance of some SEA objectives, however this will be limited to the same locations as identified in the BVP. **Beyond the findings in bold above, there are no other changes to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.**
Pathway 10 Change to deliver Enhanced Scenario	Bacton desalination (seawater) (25 Ml/d) (NTB17) would increase in capacity by 25 Ml/d – to 50 Ml/d overall. Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) desalination would increase in capacity by 75 Ml/d, to 100 Ml/d overall. Mablethorpe desalination Seawater (50 Ml/d) (LNE6) would increase in capacity by 50 Ml/d to 100 Ml/d overall. No change to delivery dates is associated with any of the above. Kings Lynn (Kings Lynn water reuse (17.4 Ml/d) (FND3)) and Ipswich (Ipswich Cliff Quay direct to Alton Reservoir (with additional abstraction and treatment at Alton) (SUE1)) reuse schemes would be required in this scenario.	Changing from BAU+ to deliver the Enhance scenario would increase the amount of water returned to the environment. Delivering water to uneconomic water bodies, including related SSSI sites and chalk streams This will have positive consequences for the biodiversity and water-related SEA Objectives that already have major or moderate findings in relation to delivering the BVP outside of its adaptive pathways. Of these, **only SEA Objective 2 is considered to change in terms of the plan's overall performance**, **moving from moderate to major positive.** The other of these objectives remain as major positive, but the overall environmental consequence would be broader due to the larger volume and greater geographic breadth of the Enhance environmental destination. The increased capacity of Bacton desalination (seawater) (25 Ml/d) (NTB17), Holland on Sea desalination (seawater) (26 Ml/d) (EXS10) and Mablethorpe desalination Seawater (50 Ml/d) (LNE6) (150 Ml in total) combined with the addition of new reuse schemes (28.9 Ml total) in both Kings Lynn (Kings Lynn water reuse (17.4 Ml/d) (FND3)) and Ipswich (Ipswich Cliff Quay direct to Alton Reservoir (with additional abstraction and treatment at Alton) (SUE1)), is considered to affect the overall plan performance. **SEA Objective 16 (minimise carbon emissions) is predicted to change from moderate negative to major negative during the operational phase. SEA Objective 20 (minimise resource use) is considered to become a significant effect across both construction and operation (moving from minor to moderate negative effect).** This is due to the increased scale of infrastructure being constructed and in relation to operational effects the approximate doubling of water produced through reverse osmosis (desalination and reuse).

Pathway	Description	SEA Findings
		Beyond the findings in bold above, there are no other changes to significant effects conclusions for each of the SEA objectives for the rdWRMP24 that would result from adapting to this Pathway, when compared to the BVP presented in Chapter 6.

8 Cumulative Impact Assessment

8.1 Overview

8.1.1 The Anglian Water rdWRMP24 and its options have been assessed at a strategic level and an assessment of cumulative effects has been undertaken as part of this process. This Chapter presents the findings of the inter-plan assessment, which considers the potential for cumulative effects between the plan and other programmes, plans and developments including more discrete projects or development proposals (e.g. Local Plan allocations). An intra-plan assessment that considers the potential for interactions and inter-relationships between various components within the plan itself (Plan B or its alternatives) has informed the discussion in Chapter 6 and 7.

8.1.2 The cumulative effects (inter-plan) assessment considers the rdWRMP24 on two levels. The first is a strategic level, which considers the interaction of the rdWRMP24 with other plans and programmes and is described in Section 8.3.1. Given that the strategic intent of Plan B and the alternative plans is the same, it is considered that the cumulative effects will be the same across Plan B and alternatives. The second is a spatial level, which considers the potential for cumulative effects on receptors that could arise from the interaction with other plans, programmes and projects. This is undertaken for Plan B and is presented in Section 8.3.2, with the identification of any differences to Plan B's significant cumulative effects for the three alternative plans outlined in Section 8.3.3. The methodology outlining the approach is described in Section 8.2. The conclusions of both these assessments are reviewed to confirm whether there is/is not an overall increase on Plan B's likely significant effects.

8.1.3 This cumulative impact assessment has been undertaken in accordance with SEA Regulations and has been based on information available at this time. The options presented within Plan B will be subject to the relevant consenting and licencing regimes when implemented. Some of these may require an Environmental Impact Assessment (EIA) under the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended), or equivalent EIA regulations, which would include a detailed assessment of cumulative effects between the project seeking consent and other consented and existing developments.

8.2 Methodology

8.2.1 There is no standard approach to the assessment of cumulative effects. Effects are rarely additive, but rather a collection of impacts on a receptor that need to be drawn together. Consideration also needs to be given to the potential for 'synergistic' effects whereby different types of impact affecting a receptor may interact together and increase the effect.

8.2.2 A cumulative effects assessment was originally undertaken for the draft WRMP24 in 2022 and this has been updated to reflect the changes in the plan, the availability of more detail from neighbouring water company draft WRMP24 and additional plans and policies that have the potential to have cumulative effects with Plan B and three alternative plans in June 2023. The approach taken for the inter-plan cumulative assessment is set out below:

Step 1 – A strategic cumulative assessment of the interactions with other policies, plans and programmes which is applicable across the rdWRMP24 regardless of the individual plans. The plans considered included:

- A review across other water company draft WRMP24s

- A review of Anglian Water's Drought Plan and Drainage and Wastewater Management Plan to identify the potential cumulative effects (it should be noted that the drought permit option included as part of Plan B has also been included within the plan assessment)
- The RBMPs to identify the potential for any cumulative effects

Step 2 – A plan based cumulative effects assessment. This used GIS to identify any plans and strategic projects that interacted with receptors affected by one or more options included in the rdWRMP24. A 500m boundary from the receptor was used and these were then uploaded onto a GIS dashboard (see point 3 below re: WFD and HRA pathways). The plans, programmes and strategic projects considered in this review were:

- Large existing and emerging Local Plan allocations
- NSIPs listed on the Planning Inspectorate's Website
- Hybrid Bills
- Transport and Works Act Orders for large-scale transport infrastructure
- Minerals and waste applications, including for landfill and energy from waste projects

A pathway rather than distance-based assessment was undertaken for the HRA and WFD. For the WFD this included an assessment of all potentially affected water bodies including surface water, groundwater and the ecosystems that depend on them. The full assessment for Plan B is provided within sub-report A – *Habitats Regulation Assessment,* and sub-report B – *Water Framework Directive Assessment* and is not repeated here and a summary of the effects including Plan B is included within Table 8.1, with any variation related to the alternatives discussed in Table 8.2.

8.3 Assessment Results

Step 1 – Cumulative Effects Associated with Wider Plans

8.3.1 The rdWRMP24 supports several local, regional, and national plans and projects. It will have a direct link to water resources and water supply plans and policies, for example in Local Plans. The development of the rdWRMP24 has taken future population growth into account and as such will support Local Plan policies on growth, housing and development. It will also have indirect links to plans that relate to health and well-being, housing, and the environment.

8.3.2 The rdWRMP24 will have direct links to other Anglian Water plans such as their Drought Management Plan(s) and Drainage and Wastewater Management Plan(s). The Drought Plan looks at demand-side management actions and supply-side management actions for ensuring water supply during drought conditions. For example, once implemented within rdWRMP24, the delivery of 1 in 500 year drought resilience (2040 in Plan B) across the water supply system will remove the need for Anglian Water to require drought permits within drought events up to that return period.

8.3.3 Links are possible with other water company's plans and strategies, particularly where water trading and transfers cross water company boundaries, for example Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29), where the deployable output is expected to be shared between Anglian Water and Cambridge Water. The coordination of both mitigation and monitoring activities will need to be undertaken where multiple water companies are responsible for the delivery of a particular option or scheme. The WRE Regional Plan will undertake a cumulative effects assessment, specifically covering its own intra-plan cumulative effects between the Regional Plan schemes and inter-plan cumulative effects with other Regional Plans and projects; this is considered to be in line with WRPG expectations to seek to manage interactions between WRMP and Regional body plan making activities.

Anglian Water Drought Plan

8.3.4 Anglian Water's Drought Plan 2022 (covering the period to 2027) sets out the range of demand management and supply augmentation measures that the company may need to implement during drought conditions to maintain essential water supplies to its customers. The measures include water use restrictions (Temporary Use Bans and Drought Orders to further restrict non-essential water use) as well as Drought Permit or Drought Order options to temporarily authorise amendments to abstraction licence conditions to enable more water to be abstracted during drought from water sources.

8.3.5 The Drought Plan 2022 identified the South Humber Bank, Central Lincolnshire, South Fenland, Newmarket, Cheveley and Bury-Haverhill WRZs as having a particular risk of severe restrictions before 2025. The rdWRMP24 options proposed are fundamentally linked to the Drought Plan, with the measures contained in each plan acting in-combination to provide a resilient water supply to customers in the Anglian Water region and safeguard the provision of essential water supplies in drought conditions.

8.3.6 In particular, the rdWRMP24 includes schemes to provide greater resilience to severe drought conditions by ensuring that, despite significant growth in demand for water, there are sufficient water supplies reliably available to sustain essential water supplies during a severe drought that may only occur on average once in every 500 years. The supply schemes are complemented by a very substantial programme of demand management measures to reduce the scale of future growth in demand.

8.3.7 A cumulative beneficial effect is identified as the demand management measures in the revised draft Drought Plan 2022 will have beneficial effects on the water environment in-combination with the extensive demand management programmes included in the rdWRMP24. This is achieved by reducing the pressure on water resources in periods of prolonged dry weather when river flows, and groundwater levels are well below normal. This would further enhance the positive effects identified for the water, biodiversity, population and human health SEA objectives, and also highlights the importance of the timing of drought resilience. Cumulative negative effects are also identified during the implementation of the drought management measures.

8.3.8 In terms of geographic location, cumulative effects may occur in catchments where the drought plans are put in place, particularly if this occurs at a time before adequate supply-side options have been introduced. Drought Plans are required to be updated every five years by water companies.

Anglian Water Drainage and Wastewater Management Plan

8.3.9 Anglian Water's Drainage and Wastewater Management Plan (DWMP) 2023 sets out how wastewater systems, and the drainage networks that impact them, are to be maintained, improved and extended over the next 25 years to ensure they're robust and resilient to future pressures.

8.3.10 A cumulative beneficial effect is identified as the rdWRMP24 contains a range of measures that complement the Drainage and Wastewater Management Plan such as Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19). There are also a range of strategies identified in the DWMP for addressing the risk from water recycling catchments including customer education, infiltration removal to reduced flows, or larger investment solutions such as water recycling centres. This would further enhance the positive effects identified for the water, biodiversity, population and human health SEA objectives.

Neighbouring Water Companies rdWRMP24s and Drought Plans

8.3.11 A review of other water company draft WRMP24s was undertaken in June 2023 to identify potential interactions with the Anglian Water rdWRMP24. In addition, the WRE Draft Regional Plan (November 2022) concluded that the cumulative effects of options within the region are less likely to be of an immediate proximity in nature, but instead relate to inter-relationships along a river, within a groundwater body, or in an estuarine / marine environment. The effects are more likely to emerge from the combined operation of options, as abstractions and discharges from proposed new supply options between one, or more, plans.

8.3.12 A cumulative adverse effect is identified for the rdWRMP24 WFD assessment processes, due to the risk of in-combination effects of water body status. Beyond this, potential cumulative environmental risks could occur in relation to other designated and protected habitats, including rivers, estuaries, wetlands and or water dependent sites. There are, however, variations in approach and, in some cases, limited detail available in relation to the WFD assessment findings for options included in other water company draft WRMP24, as such, the assessment has had to remain broad at this strategic plan level. This could increase the adverse effects identified for the water, biodiversity, population and human health SEA objectives.

8.3.13 A cumulative neutral effect is identified for the rdWRMP24 HRA assessment processes due to the HRA concluding that none of the options had the potential to affect the integrity of NSN sites.

8.3.14 A cumulative neutral effect is identified for the wider array of SEA objectives aside from biodiversity and water, due to the greater distance that will exists between new supply options contained in other Regional Plans and those set out in the WRE Draft Regional Plan. That said, these issues will need to be considered further once the detail of other draft Regional Plans and the rdWRMP24's are available.

8.3.15 Further, to the above, the SEA conducted for the draft WRE Regional Plans published in November 2022 undertook a cumulative effects assessment, specifically covering the intra-plan cumulative effects between the Regional Plans' schemes and a further inter-plan cumulative effects with other Regional Plans and projects. The results of the regional cumulative effects assessment, including effects specific to the Anglian Water rdWRMP24 are available in the regional planning report and will be updated as part of the revised draft WRE plan.

River Basin Management Plans

8.3.16 The majority of the Anglian Water region is within the Anglian River Basin, although there is a partial overlap with the Severn and Humber River Basins. The latest RBMPs were adopted at the end of 2022 and one of the key themes noted as being important during the consultation period was 'changes to planning and regulation across government, and adequate funding to deal with the impact of activity in urban areas, housing, water supply and rural areas', which is also a consideration for the rdWRMP24.

8.3.17 In accordance with the RBMPs, the rdWRMP24 includes measures to maintain a supply-demand balance while addressing the need to deliver sustainable abstraction from water bodies and measures to maximise the use of existing water resources in a sustainable manner.

8.3.18 The rdWRMP24 includes a very substantial programme of demand management activities that have been assessed in the SEA as having cumulative beneficial effects, with the Anglian RBMP measures targeted at implementing and encouraging water efficiency measures. Therefore, a cumulative beneficial effect is identified for the water, biodiversity, population and human health SEA objectives.

8.3.19 Additionally, the rdWRMP24 includes commitments by Anglian Water to carry out further investigations in consultation with the Environment Agency of some existing water sources to

assess whether abstraction licence conditions should be modified to ensure a long-term sustainable water environment as part of its wider WINEP investigations programme.

Step 2 – Cumulative Effects Associated with Programmes and Strategic Projects

8.3.20 This Section presents a summary of the cumulative effects that could arise from interactions with other developments. Step 2 involves greater consideration of specific spatial interactions than the strategic analysis in step 1, above; it identifies receptors that could be affected both by Plan B and by other programmes and strategic projects (variations related to alternative plans A, C and D's findings are presented in Table 8.2). The cumulative effects assessment has been undertaken at a high level to identify the potential for interaction and possible effects. Further consideration will be required – in relation to future project design and consenting - as additional information on these wider programmes and strategic projects, such as locations of proposed activities and the programme of construction and operation works, becomes available in the future.

8.3.21 Table 8.1 sets out the findings of the cumulative effects assessment for the receptors that could be affected by Plan B in relation to the SEA topics and objectives. We consider that when combined the effects from step 1 and step 2 of the cumulative effects assessment have no overall increase on the Plan B's likely significant effects.

Table 8.1: Cumulative Effects Assessment – Plan B

SEA Objective	Potential for Cumulative Effects
To protect designated sites and their qualifying features.	**Special Protection Areas and Special Areas of Conservation** The HRA assessment examined all the potential construction and operational effects in relation to the Habitats Site's conservation objectives and at this stage (the plan making stage) taking a precautionary approach to assessment it concluded that the plan would not have adverse effects on the integrity of Habitats Sites, as assessed against the conservation objectives. **Neutral cumulative effects have been identified on HRA Habitats Sites with other developments.** **Other designated sites** There is the potential for cumulative effects from construction activities on the River Wensum SSSI from options Norfolk East Dereham to North Norfolk Coast potable transfer (10 Ml/d) (NNC4), option Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d) (NTB10) and the Sheringham and Dudgeon Extension Project DCO all of which intersect the designated site. This could include an increased cumulative risk of pollution events and/or disturbance to species. However, it is expected that construction best practice would mitigate such risk. There is the potential for cumulative construction effects on SSSI Ouse Washes which has the potential to be directly affected by Fens Reservoir 50MCM (usable volume) (44.4 Ml/d) (FND29) and mineral extraction at LPA Block Fen / Langwood Fen East, Mepal. This could include an increased cumulative risk of pollution events and/or disturbance to species. However, it is expected that construction best practice would mitigate such risk. SSSI Upper Colne Marshes is indirectly affected by operational impacts on biodiversity and aquatic ecology from LPA EC2: East Colchester / Hythe Special Policy Area and option Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19). Provided that appropriate mitigation (identified through subsequent EIA) is implemented by

SEA Objective	Potential for Cumulative Effects
	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19), no cumulative effects are anticipated. SSSI River Nar is directly affected by LPA Land that is assigned as a minerals site to the north of Shouldham and option Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039) (FND22) at the two locations where the pipeline intersects the river within the SSSI. Therefore, there is an increased cumulative risk of pollution events and/or disturbance to species during construction. However, it is expected that construction best practice would mitigate such risk. SSSI Holland Haven Marshes are directly affected by LPA Oakwood Park, Clacton (mixed-use development including 900 homes) and option Holland on Sea desalination (seawater) (26 Ml/d) (EXS10). The option intersects the SSSI and may result in construction related impacts. There is an increased cumulative risk of pollution events and/or disturbance to species during construction. However, it is expected that construction best practice would mitigate such risk. Great Wash SPA and MPA will be directly affected by construction and operational impacts of LPA Sheringham and Dudgeon Extension Projects DCO (wind farm extension) and options Mablethorpe desalination Seawater (50 Ml/d) (LNE6), Bacton desalination (seawater) (25 Ml/d) (NTB17), South Humber Bank Non-potable desalination (60Ml/d) (SHB9), due to the laying of new pipework within the designated sites. Provided that appropriate mitigation (identified through subsequent EIA) is implemented by Mablethorpe desalination Seawater (LNE6), Bacton desalination (seawater) (25 Ml/d) (NTB17), South Humber Bank Non-potable desalination (60Ml/d) (SHB9), no cumulative effects are anticipated. Cromer Shoal Chalk Beds MCZ and the Greater Wash MPA are directly affected by Sheringham and Dudgeon Extension Projects DCO (wind farm extension) and option Bacton desalination (seawater) (25 Ml/d) (NTB17). Potential for residual construction effects of the Sheringham and Dudgeon Extension Projects. LNRs Salary Brook and Welsh Wood are affected by indirect construction effects of option Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19) and LPA for a mixed-use housing development for an initial 2,500 homes. Therefore, there is an increased cumulative risk of pollution events and/or disturbance to species. However, it is expected that construction best practice would mitigate such risk. LNR Theaker Avenue is indirectly affected by LPA Heapham Road, Gainsborough Development Brief and option Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3Ml/d) (LNN1). This will be disturbance related effects during the construction phase, which are expected to be mitigated through construction best practice. LNR Whitlingham is indirectly affected by disturbance related effects in the construction phase of LPA R9: The Deal Ground and option Bacton desalination (seawater) (25 Ml/d) (NTB17). Similarly, Whitlingham LNR Marsh is indirectly affected by disturbance related effects in the construction phase of LPA TSA1 Land at Broadlands Business Park and option Bacton desalination (seawater) (25 Ml/d) (NTB17). There is an increased cumulative risk of pollution events

SEA Objective	Potential for Cumulative Effects
	and/or disturbance to species. However, it is expected that construction best practice would mitigate such risk. **Neutral cumulative effects are identified for this Objective subject to i) the implementation of construction best practice mitigation for the Plan B Options and ii) assuming that the identified DCOs, Hybrid Bills, TWAOs and LPAs have gone through or will go through an appropriate level of environmental assessment (e.g. Environmental Impact Assessment).**
To deliver BNG, protect biodiversity, priority species and vulnerable habitats such as chalk rivers.	Ancient Woodlands Churn Wood and Home Wood is indirectly affected by construction related disturbance effects from option Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19) and Cross Boundary Garden Community Plan. Furthermore, Ancient Woodlands Birch Wood and Blybro Spring Wood are indirectly affected by construction related disturbance effects of option Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3 Ml/d) (LNN1)and Gainsborough Southern Neighbourhood (housing allocation plan) Blybro Spring Wood is also directly affected by both Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3 Ml/d) (LNN1)and Gainsborough Southern Neighbourhood. As these are indirect impacts during construction it is expected that construction best practice mitigation would manage disturbance to a level where there is no combined effect. Anglian Water has made a voluntary commitment to achieve 10% in BNG for their AMP8 cycle projects, regardless of whether the delivery of each individual option requires planning permission and is mandated to do so by law. By identifying developments and projects that have the potential to have a cumulative effect with Plan B, opportunities to work with developers can be identified at an early stage. Working with developers to design and implement a BNG strategy would have the potential for beneficial cumulative effects as it will allow an integrated approach which considers nature recovery networks and habitat connectivity. **Neutral cumulative effects are identified for this Objective.**
To avoid spreading and, where required, manage invasive and non-native species (INNS).	Each project is required to ensure that they do not spread INNS, therefore although there are multiple developments within the project area **neutral cumulative effects are anticipated as a result of the finding of the INNS risk assessment of Plan B, see sub-report D – Invasive Non-Native Species Risk Assessment for further details.**
To meet WFD objectives relating to biodiversity.	The WFD assessment provides a full cumulative effects assessment, which identified 59 water bodies likely to be impacted by more than one option and one or more strategic project. The cumulative effects assessment has not identified any risk of WFD non-compliance as a result of multiple options or strategic projects in the majority of these water bodies. Across the rdWRMP24, cumulative effects from multiple options included within the plan have been identified on two WFD water bodies within the Wash estuary, due to the potential for combined downstream impacts from the Lincolnshire Reservoir (RTN17) and Fens Reservoir (FND29) options. A separate study is currently underway to provide a better understanding of the potential cumulative effects of these options on

SEA Objective	Potential for Cumulative Effects
	the Wash as part of the SRO assessments for Gate 3 of the RAPID gate process. **A cumulative adverse effect has been identified for this Objective, related to the potential for cumulative effects (related to biodiversity) on WFD water bodies.** Further details of the WFD assessment of Plan B's cumulative effects can be found in rdWRMP24's sub-report B – *Water Framework Directive Assessment*
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing.	Noise Action Planning Important Areas may be impacted by the following cumulative LPAs/Plan B Options with the resultant effects expected to be temporary disturbance to the local communities during the construction phase: 1) Cross Boundary Garden Community and Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19) 2) E2.1 – West Winch Growth Area Strategic Policy and Marham Abstraction (7.9 Ml/d up to 2039, 12.3 Ml/d after 2039) (FND22)) 3) TSA 1 Land at Broadland Business Park and Bacton desalination (seawater) (25 Ml/d) (NTB17) Provided appropriate noise mitigation is implemented during construction, no cumulative effects are anticipated. A number of community features are also affected by Plan B options and other developments, these include: • Manor Park Sports Club will be indirectly affected by option Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d) (NTB10) and HNF2 Land East of A140, Norwich Airport. • Karston Lakes Golf Club and Thonock Park Golf Club will be directly affected by Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3 Ml/d) (LNN1) and Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d) (LNN3)and LPA Gainsborough Southern Neighbourhood. • Hilltop Outdoor centre will be indirectly affected by North Norfolk Coast WTW backwash water recovery (0.2 Ml/d) (NNC6) and LPA Land North of Holt Road (housing allocation). • Colchester Academy Sports Centre will be indirectly affected by Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19) and LPA Cross Boundary Garden Community. • Whitlingham Country Park and Whitingham Adventure will both be indirectly affected by Bacton desalination (seawater) (25 Ml/d) (NTB17) and LPA R9: The Deal Ground (residential led mixed use development). Construction related effects which could impact the health and wellbeing of the local community include pollution events (air or water), noise and disturbance. It is expected that construction best practice would mitigate such risk. The population within the Anglian Water region is forecast to grow by 940,000 people by 2040. The Plan B options are expected to

SEA Objective	Potential for Cumulative Effects
	provide sufficient water to accommodate this growth, which is anticipated to be a positive cumulative effect. **A cumulative beneficial effect has been identified for this Objective, related to the increased resilience of water supply, to accommodate future growth.**
To secure resilient water supplies for the health and wellbeing of the community.	The Anglian Water Drought Plan 2022 identified the South Humber Bank, Central Lincolnshire, South Fenland, Newmarket, Cheveley and Bury-Haverhill WRZs as having a particular risk of severe restrictions before 2025. The rdWRMP24 options proposed will have the potential for cumulative beneficial effects, by providing a resilient water supply to customers in the Anglian Water region and safeguarding the provision of essential water supplies in drought conditions, such as to those areas outlined above. **A cumulative beneficial effect has been identified for this Objective, related to the increased resilience of water supplies from the implementation of Plan B options alongside the Anglian Water Drought Plan.**
To increase access and connect customers to the natural environment, provide education or information resources for the public.	There are direct overlaps with multiple options and proposed plans including the Cross Boundary Garden Community and Oakwood Park Clacton. Depending on the year that these are constructed, there is the potential for cumulative effects during construction. Multiple instances of construction disturbance could reduce access to the environment during construction. Nevertheless, through appropriate traffic management and construction best practice, the effect will be reduced. **Neutral cumulative effects are identified for this Objective.**
Maintain and enhance tourism and recreation.	There are direct overlaps with multiple options and proposed plans. In the operational phase, there are potentially positive cumulative effects, particularly as the reservoirs could provide recreational benefits to new developments within the area. **A cumulative beneficial effect has been identified for this Objective, related to the benefits derived from the reservoir options in associated with other developments in the area.**
To reduce or manage flood risk, taking climate change into account.	28 of the 50 options will affect both Flood Zones 2 and 3. Additionally 5 options will affect Flood Zone 2 only, and 5 options will affect Flood Zone 3 only. Areas west and south of Market Deeping are particularly susceptible to cumulative effects from multiple options Ruthamford North to Bourne potable transfer (20 Ml/d) (LNB1), Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d) (LNC16) and Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17), and multiple LPAs; West Deeping Development Brief, Mallard Pass Solar Project DCO and Land off Main Road, Maxey. There is therefore the potential for cumulative effects from the loss of active floodplain, due to the implementation of Plan B alongside other plans. However, there is a planning requirement for no net loss of the floodplain storage and no obstruction to flood flows that is enforced during the planning application process. Therefore, subject to this requirement being enforced and no net loss of floodplain achieved (i.e. through compensation) **neutral cumulative effects are identified for this Objective.**

SEA Objective	Potential for Cumulative Effects
To enhance or maintain surface water quality, flows and quantity.	The WFD assessment provides a full cumulative effects assessment, which identified 59 water bodies likely to be impacted by more than one option and one or more strategic project. The cumulative effects assessment has not identified any risk of WFD non-compliance as a result of multiple options or strategic projects in the majority of these water bodies. Across the rdWRMP24, cumulative effects from multiple options included within the plan have been identified on two WFD water bodies within the Wash estuary, due to the potential for combined downstream impacts from the Lincolnshire Reservoir (RTN17) and Fens Reservoir (FND29) options. A separate study is currently underway to provide a better understanding of the potential cumulative effects of these options on the Wash as part of the SRO assessments for Gate 3 of the RAPID gate process. **A cumulative adverse effect has been identified for this Objective, related to the potential for cumulative effects (related to surface water) on WFD water bodies.**
To enhance or maintain groundwater quality and resources.	There are a number of GWDTEs which are potentially affected by options within Plan B as well as external plans and projects, these include: SSSI River Wensum, SSSI Ouse Washes, SSSI Upper Colne Marshes, SSSI River Nar and the SSSI Holland Haven Marshes. The combined effects during construction could lead to reduction in groundwater quality (as shown by the WFD assessment outputs). **Therefore, a cumulative adverse effect has been identified for this Objective, related to the GWDTEs listed above.**
To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans.	The WFD assessment provides a full cumulative effects assessment, which identified 59 water bodies likely to be impacted by more than one option and one or more strategic project. The cumulative effects assessment has not identified any risk of WFD non-compliance as a result of multiple options or strategic projects in the majority of these water bodies. Across the rdWRMP24, cumulative effects from multiple options included within the plan have been identified on two WFD water bodies within the Wash estuary, due to the potential for combined downstream impacts from the Lincolnshire Reservoir (RTN17) and Fens Reservoir (FND29) options. A separate study is currently underway to provide a better understanding of the potential cumulative effects of these options on the Wash as part of the SRO assessments for Gate 3 of the RAPID gate process. **A cumulative adverse effect has been identified for this Objective, related to the potential for cumulative effects (related to WFD objectives) on WFD water bodies.**
To increase water efficiency and increase resilience of water supplies and natural systems to droughts.	Shifts in behavioural changes along with efficiency savings will allow Plan B to maintain a supply demand balance during the plan period, through increasing the volume of water resource available. This will increase resilience of water supplies and allow the licence capping measures to be implemented while maintaining the deployable output reductions required to meet BAU+ environmental destination for 2040. This has the potential for cumulative effects with developments taking place within the area as it will increase their water efficiency and resilience to water supplies, particularly for local plan housing allocation plans such as new villages in Marston Vale

SEA Objective	Potential for Cumulative Effects
	in Bedfordshire where 5000 new homes, community facilities and services, plus a minimum of 40ha of employment land is proposed. **A cumulative beneficial effect has been identified for this Objective, related to the increased resilience of water supplies to new housing.**
To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land, and geodiversity.	Cumulative effects could arise from the potential to disturb contaminants where construction activities within Plan B intersect and are within 500m the same Authorised Landfill sites as wider projects and plans. There are number of landfills within the region which could be impacted both by plan options, plans and / or projects. **While there is the potential for this to be mitigated through design, at present an adverse cumulative effect on landfill sites has been identified.** Plans, projects and other developments are also located within areas of best and most versatile agricultural land. Certain schemes, such as transfers will look to reinstate land once construction has finished. However, those options with above ground infrastructure will be unable to do this with present design. Thus, while there is the potential for this to be mitigated through design (e.g. compensation), at present there is **an adverse cumulative effect predicted on agricultural land.**
To reduce and minimise air emissions during construction and operation.	Central Norwich AQMA will be indirectly affected by option Bacton desalination (seawater) (25 Ml/d) (NTB17) and R9: The Deal Ground LPA and so there is the potential for cumulative effects during construction. However, provided appropriate noise mitigation is implemented during construction, no cumulative effects are anticipated. **Neutral cumulative effects are identified for this Objective.**
To minimise/reduce embodied and operational carbon emissions	Areas such as Milton Keynes, Norwich and Cambridge have multiple developments planned within the same area as the supply-side options. This could have the potential to have a cumulative effect on carbon emissions within the Anglian Water Region. The Mallard Pass Solar Farm DCO, during operation, will power up to 92,000 homes and in combination with Anglian Water's Net Zero Plan (again during operation) is likely to combine to a beneficial cumulative effect, by reducing carbon emissions and supporting the UKs Net Zero ambitions. All developments and sectors contribute to carbon emissions within the context of the UK's intended flight path to Net Zero. Larger future development schemes such as Plan B's infrastructure, other infrastructure projects and major housing are likely to have larger specific additions of embedded carbon and locking in more energy intensive operational needs. **A cumulative beneficial effect has been identified for Plan B as it has the opportunity to add to existing knowledge sharing and learn from other development's progress and innovation in reducing such emissions. There is also a cumulative negative effect due to the embodied carbon associated with the construction of a number of large infrastructure projects.**
To introduce climate mitigation where required and improve the climate	The combination of Plan B's demand management options by 2050 retain over 200 Ml/d of water within the environment, compared to the 2025 baseline, this improves the resilience of the natural system. The scale of Plan B's demand management options is such that the additional water demands from population growth in the AW region between 2025 and 2050 are fully met – including related new

SEA Objective	Potential for Cumulative Effects
resilience of assets and natural systems.	development. As such, there is no cumulative impact expected. The additional developments do nonetheless have the potential to reduce the benefits realised to climate mitigation and resilience from Plan B, and therefore the overall positive effect may be reduced in scale. **Neutral cumulative effects are identified for this Objective.**
To conserve/protect and enhance historic environment and heritage assets, and their setting, including archaeologically important sites.	The Roman Camp and Settlement Site west of Horse Stead is directly affected by Land at Grange Farm (Buxton Road, Horse Stead) and options Norwich and the Broads to Aylsham potable transfer (3 Ml/d) (NAY1) and Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d) (NTB10). Road Bridge at St Andrews Hospital is affected LPA TSA1 Land at Broadland Business park and option Bacton desalination (seawater) (25 Ml/d) (NTB17). There is potential for adverse cumulative effects on the presence and/or setting of such historic assets (e.g. Listed Buildings) where the options are within or adjacent to the designation. This would primarily be temporary during construction, which would be managed through construction best practice mitigation. Those options which have above ground infrastructure would overlap from the impacts of external projects and plans. **There is thus potential for an adverse cumulative effect on these historic environment assets**.
To conserve, protect and enhance landscape and townscape character and visual amenity.	Several landscape designations have the potential to be affected by Plan B options and external plans or projects, these include: • Norfolk Coast AONB has potential to be indirectly affected by construction of options North Norfolk Coast WTW backwash water recovery (0.18Ml/d) (NNC5), North Norfolk Coast WTW backwash water recovery (0.2Ml/d) (NNC6) and Sheringham and Dudgeon Extension Projects DCO (wind farm extension) DCO. • The Broads National Park will be indirectly affected by options Norwich and the Broads to Aylsham potable transfer (3 Ml/d) (NAY1), Norfolk Bradenham to Norwich and the Broads potable transfer (20 Ml/d) (NTB10), Bacton desalination (seawater) (25 Ml/d) (NTB17) and LPA DEV.NOR.GYA1. This is during construction only (for the transfer) as it is expected that reinstatement of land above the transfers will take place. For Bacton Desalination plant impacts are construction and operation. There will be an expectation at planning stage for the impacts from Plan B options on these receptors to be mitigated, through an appropriate landscape and visual impact assessment. **At this stage, a cumulative adverse effect is predicted due to the presence of multiple schemes in proximity or within these designations.**
Minimise resource use and waste production.	Areas such as Milton Keynes, Norwich and Cambridge have multiple developments planned within the same area as the supply-side options. This could have the potential for cumulative effects on resource use and waste production, as the requirements for construction are increased substantially. **A cumulative adverse effect has been identified for this Objective, related to the combined effects on resources (required for construction) and waste produced during construction.**
Avoid negative effects on built	**Roads:**

SEA Objective	Potential for Cumulative Effects
assets and infrastructure.	There are a number of potential cumulative effects on the key transport network, from Plan B and external Project and Plans. For instance, there are eight A-Roads with potential direct overlapping effects (e.g. both affected by tunnelling works), there are another 12 roads with potential for indirect effects. One Motorway (the M1) also has the potential for direct effects. **Railway:** Option Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19) and LPA Cross Boundary Garden Communities will indirectly affect multiple locations on both the Sunshine Coast Line and the Great Eastern Main Line at Colchester. One location southeast of Colchester (ref: 548737, 262776) on the Sunshine Coast Line will be directly affected. Option Cambridge to Suffolk West Cambs potable transfer (50Ml/d) (SWC8)) and LPA DCO will directly affect the East Coast Mainline north of Cambridge. **National Cycle Routes:** 1) Route 11 (Kings Lynn to Harlow) will be directly and indirectly affected by option Cambridge to Suffolk West Cambs potable transfer (50Ml/d) (SWC8) and Cambridge Waste Water Treatment Plant Relocation DCO. 2) Route 51 will be directly and indirectly affected by Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4 Ml/d up to 2039, 13.9 Ml/d after 2039) (EXS19) and LPA EC2: East Colchester / Hythe Special Policy Area. 3) Route 21 will be directly and indirectly affected by Ruthamford North to Bourne potable transfer (20 Ml/d) (LNB1), Ruthamford North to Lincolnshire Central potable transfer (20 Ml/d) (LNC16), Lincolnshire Reservoir 50MCM (usable volume) (169 Ml/d) (RTN17) and LPA Land off Main Road, Maxey (minerals and waste). **National Trails**: Pedder's Way and Norfolk Coast Path will be directly affected by LPA DCO and options Fenland to Norfolk Bradenham potable transfer (50 Ml/d) (NBR6), Suffolk Thetford to Norfolk East Harling potable transfer (5 Ml/d) (NEH3), Norfolk Bradenham to Suffolk Thetford potable transfer (15 Ml/d) (SUT5). **Due to the above, there is the potential for an adverse cumulative effect due to interactions between the Plan B options and external Plans and Projects.**

Step 3 – Cumulative Effects of Alternative Plans

8.3.22 An assessment of how the assessment of cumulative effects differs across the three alternative plans (when compared to the Plan B outcomes outlined above) is provided in Table 8.2 below.

Table 8.2: Alternative plans and potential for additional or reduced cumulative effects compared to Plan B

Plan	Potential for additional or reduced cumulative effects compared to Plan B
Plan A	Plan A has the same overall findings across the SEA objectives as Plan B, and therefore the same conclusions on cumulative effects, although details of the timings and location of some effects that would result from them are different, as discussed in Section 7.3. This is because policy decisions, including detail on demand management options, that form the basis of many of the Plan's positive effects are very similar, as any Plan developed for WRMP24 would be required to deliver licence capping, 1 in 500-year drought resilience and environmental destination. Plan A is based on the initial supply demand forecast scenario, with supply-side options generated on a least cost basis. Plan B's variation to these two alternative plans is driven by its supply-side options selection being directed by best value planning approach, which optimises on factors beyond least cost, including: the metrics derived from the environmental assessment and customer preferences amongst other things (Figure 2.3). Lowestoft and Caister reuse combined (to Costessey) – treatment (27.5 Ml/d) (NTB28) and Lincolnshire Central to Ruthamford North potable transfer (60 Ml/d) (RTN29) are the only additional options with the potential for cumulative effects with other projects, including DCOs such as Sheringham and Dungeon Extension Project. These both interact with multiple receptors including the River Wensum SSSI, Nitrate Vulnerable Zones (Norwich Crag and Gravels) and the A47. However, these interactions are not predicted to a result in a change to the cumulative effects reported for Plan B in Table 8.1 above. The HRA has concluded that prior to mitigation, there is reasonable scientific doubt as to the absence of adverse effects on the integrity of habitats sites for all options. The robust mitigation measures described in Plan B's HRA this assessment (which would apply to Plan A if it were being progressed as the preferred plan) can practically reduce to acceptable levels such adverse effects, ensuring the plan's compatibility with the statutory protection afforded to habitats sites. The WFD assessment concluded that in Plan A there were no options identified with risk of non-compliance with WFD.
Plan C	Plan C has the same overall findings across the SEA objectives as Plan B, and therefore the same conclusions on cumulative effects, although details of the timings and location of some effects that would result from them are different, as discussed in Section 7.4. This is because policy decisions, including detail on demand management options, that form the basis of many of the Plan's positive effects are very similar, as any Plan developed for WRMP24 would be required to deliver licence capping, 1 in 500 year drought resilience and environmental destination. Plan C using the same least cost approach as Plan A but derived from modification from that initial scenario to optimise it based on the best value planning objectives. Plan B's variation to these two alternative plans is driven by its supply-side options selection being directed by best value planning approach, which optimises on factors beyond least cost, including: the metrics derived from the environmental assessment and customer preferences amongst other things (Figure 2.3). Caister desalination Seawater (25 Ml/d) (NTB20) is the only additional option with the potential for cumulative effects with other projects, including the Sheringham and Dungeon Extension DCO Project and TSA 1 Land at Broadland Business Park. These both interact with multiple receptors including the Greater Wash SPA, Southern North Sea SAC and MPA and a noise action planning area. However, these interactions are not predicted to a result in a change to the cumulative effects reported for Plan B in Table 8.1 above. The HRA has concluded that prior to mitigation, there is reasonable scientific doubt as to the absence of adverse effects on the integrity of habitats sites for all options. The robust mitigation measures described in this assessment can practically reduce to acceptable levels such adverse effects, ensuring the plan's compatibility with the statutory protection afforded to habitats sites. The WFD assessment concluded that in Plan C there were no options identified with risk of non-compliance with WFD.
Plan D	Plan D is based on a key difference in one policy decision (environmental destination) moving from delivery of BAU+ (as is the case for Plan B and the alternative plans A and C) to Enhance, which drives a substantial increase in the scale of new supply required across the planning period, approximately 200 Ml/d more in 2050 than each of Plans A, B and C. The detail of the supply-side options selected changes, with a third of them different to those in the BVP (Plan B) (18 of 54 supply options), but this does not change the types of supply schemes that are being selected, instead just increasing future volumes of water required and the number and location of sites selected. As such, the overall types of environmental risks, and the significance remains similar to Plan B although across a wider range of specific geographic locations, where additional sites for new infrastructure are selected. There is therefore a greater chance of cumulative effects, although the nature of these is expected to be the same as for Plan B.

Plan	Potential for additional or reduced cumulative effects compared to Plan B
	The delivery of the Enhance environmental destination and a year earlier drought resilience in Plan D would require approximately 200 Ml/d of additional new supply-side capacity to be operational by 2040, would have consequences for the significant negative effects of Plan D, for example SEA Objectives relating to climatic factors and material assets (as a result of additional resource use). Additional locations are also at risk from construction and wider operational effects of these schemes. Once operational, the beneficial effects on biodiversity and the water environment are expected to be more pronounced, that is, positive due to the greater retention of water within the environment. Negatively as there are a number of additional and larger-sized options in operation. However, these interactions are not predicted to a result in a change to the cumulative effects reported for Plan D in Table 8.1 above. The HRA has concluded that prior to mitigation, there is reasonable scientific doubt as to the absence of adverse effects on the integrity of habitats sites for all options. The robust mitigation measures described in this assessment can practically reduce to acceptable levels such adverse effects, ensuring the plan's compatibility with the statutory protection afforded to habitats sites. The WFD assessment concluded that in Plan D there were no options identified with risk of non-compliance with WFD.

9 Mitigation Measures and Enhancement Opportunities

9.1 Mitigation Measures

9.1.1 Mitigation measures were identified as part of the SEA options assessment process and are recorded in the assessment tables (see Appendix A). The outcome of the assessments (reported in Chapters 6, 7 and 8) are the residual effects, which means that it is assumed that the identified mitigation has been applied (to the option) and the reported effects are those that remain. It is noted that the HRA Appropriate Assessment and WFD Level 2 assessment – within sub-report A – *Habitats Regulation Assessment,* and sub-report B – *Water Framework Directive Assessment*, respectively, for specific supply-side options contain additional description of mitigation relevant to the focus of those assessments, which can be found in the relevant Chapters of those documents.

9.1.2 The identified mitigation generally falls into two categories. The first is primary (or embedded) mitigation; generally, actions that are taken to avoid impacts occurring by incorporating them into the options development process. For example, pipeline re-routing and directional drilling to avoid significant effects on designated sites and heritage assets. Incorporation of these measures at this early strategic stage will help deliver a WRMP that benefits the environment and reduces the risk of significant negative effects and cost-prohibitive mitigation measures further down the line during detailed design of specific options.

9.1.3 The second type of mitigation is secondary (or reductive) mitigation. This is where an impact cannot be avoided and the focus is on reducing the impact or providing some form of compensation. For example, using renewable energy to reduce carbon emissions. Additional actions such as further investigations and risk assessments can also form and lead to actions which are secondary mitigation.

9.1.4 How the secondary mitigation is secured will depend on the type of mitigation and the consenting route. For some projects, Environmental Impact Assessments (EIAs) will require a systematic review of impacts and the appropriate mitigation. The actions to mitigate the impacts will be identified and documented, for example, in a Construction Environmental Management Plan. Statutory stakeholders such as the Environment Agency, Natural England and Historic England will also seek to secure mitigation, through engagement in the consenting process, with the local planning authority and/or planning inspectorate. The granting of consent will include the mitigation (for example, a schedule of commitments, planning conditions, etc.) and Anglian Water will be required to discharge those requirements.

9.1.5 Mitigation and enhancement measures specific to each option are presented within the relevant SEA tables in Appendix A. In addition to this, mitigation measures identified within the more in depth Level 2 assessments undertaken under the HRA and WFD processes for supply-side options (see Section 5.5) are available in the Appropriate Assessment Chapters and WFD Level 2 assessment Chapters of the rdWRMP24 sub-report A – *Habitats Regulation Assessment,* and sub-report B – *Water Framework Directive Assessment*. All this information informs the identification of significant effects presented in Chapter 6 and 7.

9.1.6 The HRA Appropriate Assessment secondary mitigation measures may include but are not limited to: biosecurity measures to ensure appropriate removal and/or management control of INNS at source; the use of directional drilling at watercourses of specified sizes; completion of further studies including hydrological modelling of the abstraction on specified rivers; pre-

construction surveys for breeding or resting species within the ZoI; and reinstatement of habitats that have been disturbed during construction.

9.1.7 The WFD Level 2 assessment secondary mitigation measures may include but are not limited to: fish and eel screening; adjustment of abstraction conditions to limit changes to hydrological regime; use of licence capping; creation of habitat refuges; and sealing of shafts to ensure minimal groundwater egress after construction.

9.1.8 The reported significant effects in those Chapters (and Chapter 8) are post-mitigation (residual) effects of the SEA findings and have assumed relevant and applicable mitigation measures are incorporated. As the mitigation measures identified below have been considered in the option assessment process, they all contribute to reducing effects that have been identified as a result of the rdWRMP24.

9.1.9 The mitigation measures have been collated into a register (see Table 9.1).

Table 9.1: Proposed Mitigation Measures

SEA Topic	SEA Objective(s)	Mitigation
Biodiversity, flora and fauna	1. To protect designated sites and their qualifying features. 2. To protect and enhance biodiversity, priority species and vulnerable habitats such as chalk rivers.	Best practice methods are to be implemented during construction to minimise disturbance effects, prevent the spread of INNS, and habitat loss. This includes refining pipeline alignment or using trenchless techniques to avoid woodland habitat, particularly Ancient Woodland and BAP Priority Habitat. For mitigation measures for supply-side options that underwent HRA AA refer to sub-report A – *Habitats Regulation Assessment*.
	3. To avoid spreading and, where required, manage invasive and non-native species (INNS).	To ensure that the operation does not lead to a transfer of invasive species, appropriate filtration species must be in place.
	4. To meet WFD objectives relating to biodiversity.	Pollution prevention measures are to be implemented, including the use of directional drilling or other trenchless techniques where the pipeline crosses watercourses. Route re-alignment is recommended if it is possible to avoid direct impacts with the SSSI, Ramsar, SAC, SPA and MPA, or to avoid the most high-value habitats. Abstraction from rivers will be taken at appropriate times to mitigate against effects on water-dependent designated sites. For mitigation measures for supply-side options that underwent WFD Level 2 assessment refer to sub-report B – *Water Framework Directive Assessment*. Ecology surveys will be required at further design stages to determine the effects and mitigation that will be required. Habitat will be reinstated upon completion, and compensatory habitat is to be considered to replace damaged or lost habitat. Appropriate filtration systems required to ensure the option doesn't lead to the transfer of INNS.
Population and Human Health	5. To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing.	Best practice mitigation measures, for example noise management, are to be implemented to minimise disturbance during construction.

SEA Topic	SEA Objective(s)	Mitigation
	6. To secure resilient water supplies for the health and wellbeing of customers. 7. To increase access and connect customers to the natural environment, provide education or information resources for the public. 8. To maintain and enhance tourism and recreation.	The direct land take of recreational sites will be avoided where possible, and land is to be reinstated.
Water	9. To reduce or manage flood risk, taking climate change into account. 10. To enhance or maintain surface water quality, flows and quantity. 11. To enhance or maintain groundwater quality and resources. 12. To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans. 13. To increase water efficiency and increase resilience of Public Water Supply (PWS) and natural systems to droughts.	Best practice measures will be implemented to reduce the impact on flooding during the construction phase. A Flood Risk Assessment is to be undertaken and above-ground infrastructure will be designed to be flood resilient. Floodplain compensation may be required. Pollution prevention measures are to be implemented, including the use of directional drilling or other trenchless techniques where the pipeline crosses watercourses. Identify any mitigation (avoidance, reduction) measures necessary as a result of findings from monitoring of river flows (required to determine when surface water can be abstracted) and monitoring of ground water levels. For mitigation measures for supply-side options that underwent WFD Level 2 assessment refer to sub-report B – *Water Framework Directive Assessment*. Further assessment of the effects under the WFD would be required for those water bodies detrimentally affected. Monitoring river levels during construction. Designing flood resilient design.
Soil	14. To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land, and geodiversity.	Best practice construction techniques are to be implemented to prevent the disturbance of contaminated material. Damage to agricultural land will be lessened through design, to reduce the option footprint and the construction working area. This will restrict the amount of land permanently taken or temporarily disturbed. Reinstating agricultural land. Permanent loss should be on non-BMV (best and most versatile) land where possible, and only on BMV land where there are no other alternatives. The reinstatement or reprovision of land will be required post-construction.
Air	15. To reduce and minimise air emissions during construction and operation.	Best practice mitigation measures are to be implemented during construction.
Climatic Factors	16. To minimise/reduce embodied and operational carbon emissions. 17. To introduce climate mitigation where required and improve the climate resilience of assets and natural systems.	The use of renewables for the energy supply during construction and operation will be investigated, as well as the use of materials with lower embodied carbon. A carbon footprint study could help identify areas for carbon savings or alternative materials. As the electricity grid is decarbonised, greener energy will become available. Seek alternatives to energy intensive activities, such as pumping, where practicable alternatives could be used. The sustainable use of water should be ensured to reduce the vulnerability of the local environment.

SEA Topic	SEA Objective(s)	Mitigation
Historic Environment	18. To conserve/Protect and enhance the historic environment including the significance of designated and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting.	Best practice measures are to be implemented to minimise setting effects for heritage assets during construction. Measures will be incorporated to reduce setting impact of the reservoir and embankment, for example the planting of trees to screen and reduce the height of any embankment. Further work is likely to be required to collate data related to non-designated cultural heritage assets. This will then be used to inform the development of the design at the next stage of assessment. Further work is likely to be required to determine the significance of effect, depending on the presence or absence of buried archaeology. Further studies will be undertaken as the option design progresses, including consultation with LPA advisors and a review of the Historic Environment Record. Early engagement with regional Historic England office, particularly in locations where there is potential for nationally significant remains. Temporary works to be situated away from listed buildings and scheduled monuments where appropriate.
Landscape	19. To conserve, protect and enhance landscape and townscape character and visual amenity.	Best practice measures are to be implemented to minimise effects during construction. Land affected by transfer pipelines will be reinstated upon completion. Measures will be incorporated to reduce landscape and visual impact of substantive above ground infrastructure (e.g. a reservoir and embankment), for example the planting of trees to screen and reduce the height of any embankment. However, although design features will likely improve the aesthetics, the landscape will remain changed. If possible, re-routing the pipeline would minimise the damage and disruption to woodland, including Ancient Woodland. The utilisation of directional drilling or other trenchless techniques.
Material Assets	20. To minimise resource use and waste production. 21. To avoid negative effects on built assets and infrastructure (including green infrastructure).	Opportunities will be sought after to implement sustainable design measures (design to reduce footprint, selection of materials) and reuse excavated material to reduce the impact. Best practice measures, including a Traffic Management Plan, are to be implemented to minimise disturbance during construction. However, temporary effects are likely to still occur.

9.1.41 Two areas of additional mitigation – corporate initiatives – emerge across the rdWRMP24 to improve its performance. These are both the Net Zero Strategy for operations, and the BNG Strategy which are summarised below. Further information on these strategies can be found in Chapter 6, and Section 9.3.6.

9.1.42 The Net Zero Strategy includes a commitment to net zero operational carbon by 2030 to align with the UKs Net Zero ambitions; this strategy focusses on maximising energy efficiency and renewable energy generation and storage. It also places emphasis on targeting capital (embodied) carbon emissions throughout project delivery. The BVP options and delivery

scheme offer the ability to add to an existing knowledge sharing platform for low-emission development, and to learn from innovations in reducing carbon emissions within the industry.

9.1.43 The BNG Strategy will highlight a series of strategic areas, with high potential for biodiversity creation and enhancement, guiding the delivery of BNG across the region. These strategic areas will be targeted, and proposals created, to ensure the best outcomes can be achieved for biodiversity and the wider environment. This strategy will be used as a foundation when developing the options within the rdWRMP24 and will ensure that Anglian Water achieves a minimum of 10% net gain across its whole plan.

9.1.44 The SEA has identified a large array of mitigation measures to help the BVP achieve SEA Objectives 1-21 through the options and delivery scheme selected with the rdWRMP24. Anglian Water will be responsible for embedding these measures, the secondary mitigation, additional mitigation, and the wider suite of supporting environmental assessments into information provided to the internal team and contractors for the design and consenting of each option within the scheme delivery.

9.2 Enhancement Opportunities

9.2.1 The SEA identified numerous enhancement measures across the option assessments, these included:

- There could be potential to enhance cycleways, bridleways and public right of way networks as part of the works, for example during re-instatement.
- Operational benefits could be enhanced by incorporating education and information resources within the design, for example in trails and information boards.
- There could be specific enhancements for the reservoirs, such as incorporating recreational activities into the reservoir design, such as fishing, sailing, and canoeing. This would need to be done sensitively, whilst recognising and minimising INNS risks.
- Development of sites as a tourism/ recreational asset, which may in turn provide jobs.
- Opportunities to create habitat as part of a reservoir – the new reservoirs have significant potential opportunities for ecology.
- Opportunity to improve existing habitats through post construction remediation. Options cross Natural England Network Enhancement Zones 1 and 2 and the network expansion zone – so suitable for planting high value habitats.
- Opportunities for sustainable design measures and reuse of material.

9.3 Environmental Net Gain

Metrics

9.3.1 The SEA process is a core component of considering the wider Environmental Net Gain (ENG) of the WRMP24, in line with WRPG expectations. The UK government is developing a tool (‘Eco-metric’) to assess quantifiable ENG benefits, however this was not ready for use on the water resources plans at the time of their development. Therefore, the findings across the SEA, NCA and BNG assessments are considered across the rdWRMP24 to ensure the Plan would leave the natural environment in a measurably better state than it is currently. Demonstrating achievement of BNG is a key requirement, and in addition the ENG approach included consideration of wider environmental gains such as improvements in air and water quality identified by the SEA and NCA. This allowed the benefits of the plan to customers, society, and the environment to be measured, understood, and clearly explained as part of the WRMP24.

9.3.2 Following the BNG and NCA, opportunities should be considered to ensure that the natural environment is left in a better condition than pre-construction conditions. This should be achieved by the following:

- Mitigation Hierarchy: Utilising the mitigation hierarchy starting with avoiding, minimising, rectify and reduce habitat losses.
- Mitigation: Opportunities to offset the net loss of biodiversity asset(s) and/or Natural Capital stock(s) (ecosystem service).
- Enhancements: Opportunities that, once introduced and established, would result in a net gain to a biodiversity asset and/or Natural Capital stock(s) (ecosystem service).

9.3.3 As a core principle, where possible, the scheme should aim to not only reinstate lost habitat, but also provide a greater or more diverse habitat than is lost, to achieve overall BNG. The latter could be achieved by identifying local sites of ecological interest and proposing measures. Any habitats that are created or enhanced to achieve BNG are required to be secured for 30 years, through management, maintenance and monitoring. A natural capital map should be utilised, where possible, to assist in identifying opportunities to improve natural capital.

BNG and Unit Purchase

9.3.4 Habitat creation possibilities, other than unit purchase, to achieve a 10% BNG gain include:

- On-site: Improve the existing habitats on-site through post construction remediation and replacement of low BNG value habitats with higher BNG value habitats.
- Off-site: Consider suitability of opportunities on other parts of the Anglian Water estate. The option to purchase suitable areas of off-site land within the local area and/or at a regional scale to offset BNG decrease by improving the existing habitats within the off-site land and/or by replacing existing habitats with higher BNG value habitats. However, similar benefits could also be achieved through unit purchase schemes.
- On-site and off-site: Improve existing habitats and/or replacement of low BNG value habitats with higher BNG value habitats as part of the catchment management options.

9.3.5 BNG may be achieved via a new statutory biodiversity credits scheme. Credits may also be bought by land owners and/or developers as a last resort when onsite (preferred) and local offsite provision of habitat cannot deliver the BNG required. The processes for the price of biodiversity credits will be set higher than prices for equivalent biodiversity gain on the market.

9.3.6 Anglian Water will have a Voluntary AMP8 Natural Capital Performance Commitment to achieve a minimum of 10% BNG against measured losses of biodiversity on Anglian Water-owned land. It will apply to habitats measured by area (ha) and length (km), covering hedgerows and lines of trees that are affected by construction and nature conservation land management. This commitment will see Anglian Water go above and beyond the statutory BNG commitment due to become mandatory in November 2023.

9.3.7 The measures for delivering BNG for each option will be developed at project-level, adhering to the latest BNG guidance, and aligned within the context of the wider portfolio of options. To achieve this, Anglian Water are developing a BNG Strategy which will enable strategic and effective delivery of projects across the business. This goes beyond future public water supply options (like those included in this plan) to also include the operation and maintenance of existing Anglian Water sites, which includes assets related to both drinking water and wastewater.

9.3.8 The BNG Strategy will;

- identify opportunities to avoid and minimise impacts on existing habitats through further refinement of option design
- identify opportunities to create and enhance habitats, both on-site where the losses have occurred and off-site
- and link these opportunities with national and local strategic priorities for conserving and enhancing biodiversity

9.3.9 The BNG Strategy will highlight a series of strategic areas, with high potential for biodiversity creation and enhancement, guiding the delivery of BNG across the region. These strategic areas will be targeted, and proposals created, to ensure the best outcomes can be achieved for biodiversity and the wider environment.

9.3.10 This strategy will be used as a foundation when developing the options within the rdWRMP24 and will ensure that Anglian Water achieves a minimum of 10% net gain across its whole plan.

Nature Recovery Networks

9.3.11 The Government's 25 Year Environment Plan[29] includes provision for a Nature Recovery Network and states that it will deliver on the recommendations of the Lawton Report[30] that recovering wildlife will require more habitat; in better condition; in bigger patches that are more closely connected. As well as helping wildlife thrive, the NRN could be designed to bring a wide range of additional benefits: greater public enjoyment; pollination; carbon capture; water quality improvements and flood management.

9.3.12 Natural England have produced a series of habitat network maps[31] to help address the challenges outlined in the Lawton report and believe they should provide a useful baseline for the development of a NRN as required within the 25 Year Environment Plan and Local Nature Recovery Strategies as proposed within the Environment Bill. The maps have been created to provide a national overview of the distribution of habitat networks with suggestions for future action to enhance biodiversity, to help stimulate local engagement with partners and to agree local priorities and identify where action might help build more ecologically resilient ecosystems across landscapes. They include:

- **Habitat Creation/Restoration:** Areas where work is underway to either create or restore the primary habitat.
- **Restorable Habitat:** Areas of land, predominantly composed of existing semi-natural habitat where the primary habitat is present in a degraded or fragmented form and which are likely to be suitable for restoration.
- **Network Enhancement Zone 1:** Land connecting existing patches of primary and associated habitats which is likely to be suitable for creation of the primary habitat. Factors affecting suitability include proximity to primary habitat, land use (urban/rural), soil type, slope and proximity to coast. Action in this zone to expand and join up existing habitat patches and improve the connections between them can be targeted here.
- **Network Enhancement Zone 2:** Land connecting existing patches of primary and associated habitats which is less likely to be suitable for creation of the primary habitat. Action in this zone that improves the biodiversity value through land management changes and/or green infrastructure provision can be targeted here.

[29] 25 Year Environment Plan - GOV.UK (www.gov.uk)

[30] Lawton, J.H., Brotherton, P.N.M., Brown, V.K., Elphick, C., Fitter, A.H., Forshaw, J., Haddow, R.W., Hilborne, S., Leafe, R.N., Mace, G.M., Southgate, M.P., Sutherland, W.A., Tew, T.E., Varley, J., & Wynne, G.R. (2010) Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra.

[31] Edwards J, Knight M, Taylor S & Crosher I. E (May 2020) 'Habitat Networks Maps, User Guidance v.2', Natural England

- **Fragmentation Action Zone:** Land within Enhancement Zone 1 that connects existing patches of primary and associated habitats which are currently highly fragmented and where fragmentation could be reduced by habitat creation. Action in this zone to address the most fragmented areas of habitat can be targeted here.
- **Network Expansion Zone:** Land beyond the Network Enhancement Zones with potential for expanding, linking/joining networks across the landscape i.e., conditions such as soils are potentially suitable for habitat creation for the specific habitat in addition to Enhancement Zone 1. Action in this zone to improve connections between existing habitat networks can be targeted here.

10 Next Steps and Monitoring Proposals

10.1 Monitoring Proposals

10.1.1 Monitoring the negative effects of implementing the final rdWRMP24 is an essential continuous element of the SEA process. Monitoring helps ensure that the identified SEA objectives are being achieved and allows for early identification of unforeseen adverse effects and thus appropriate remedial action can be taken. Monitoring will be an important requirement to measure performance and ensure the rdWRMP24 is being successfully implemented.

10.1.2 The SEA Regulations expect that monitoring should focus on the significant negative effects identified through the assessment. The UKWIR guidance[32] recommends that existing arrangements for monitoring should be used where possible to avoid duplication of effort.

10.1.3 Negative effects or areas of uncertainty identified during the SEA process focused on effects on biodiversity, climatic factors, landscape, and the historic environment. Table 10.1 presents the proposed SEA monitoring at this rdWRMP24 stage. The indicators have been adapted to those developed as part of the SEA Framework. Indicators have also been chosen to record the potential benefits that the rdWRMP24 achieves, for example recreational assets created or waste recycled/reused.

10.1.4 The need and triggers for monitoring will vary. Some of the monitoring is already collected by Anglian Water and reported to Ofwat and the Environment Agency. Some of the monitoring information is available from publicly available sources and can be used by Anglian Water to identify sensitivities in particular locations. It is likely that the need for detailed monitoring will be determined on a case-by-case basis as projects (options) identified in the rdWRMP24 come forward for development. The magnitude of changes and sensitivity of receptors will inform a proportionate approach to monitoring based on the mitigation measures in place and the potential for negative environmental and social effects.

10.1.5 The monitoring outlined in the SEA Option Assessments (Appendix A) for supply-side options will be carried forward throughout option development. It is Anglian Water's responsibility to ensure that appropriate monitoring is carried out and for communicating the findings related to rdWRMP24 activities to the relevant stakeholders. These activities include those of WINEP investigations, the SRO RAPID process, and pilot desalination processes (research). This monitoring is important to build up an understanding of the developing environmental risks associated with the implementation of rdWRMP24, but also to share knowledge, best practice, lessons learned and innovation.

Table 10.1: Monitoring Proposals

SEA Objective	Proposed Indicators	Proposed Timescale	Commentary
To protect designated sites and their qualifying features.	Area (ha) and number of statutory and non-statutory ecological sites that will be harmed or lost to WRMP options SSSI monitoring	During and post-construction	Anglian Water are responsible for collecting data on condition of specific protected sites.
To deliver BNG, protect biodiversity, priority species and vulnerable	Area of blue and green infrastructure created	During and post-construction	Anglian Water are responsible for collecting data on BNG Units lost

[32] UK Water Industry Research (WIR) (2021). Environmental Assessments for Water Resources Planning. UKWIR Ref. 21/WR/02/15. Available at: https://ukwir.org/environmental-assessments-for-water-resources-planning

SEA Objective	Proposed Indicators	Proposed Timescale	Commentary
habitats such as chalk rivers.	% of habitat creation or existing habitat enhancement		and provided for each project.
To avoid spreading and, where required, manage invasive and non-native species (INNS).	% of INNS risks mitigated	A construction related INNS risk assessment should be conducted in the future	Anglian Water to undertake INNS risk assessments and implement risk management for all relevant projects
To meet WFD objectives relating to biodiversity.	Ecological status of water bodies	Annually	Anglian Water to undertake WFD assessments for all relevant projects. Monitor status of water bodies (relevant to projects) using publicly available information.
To maintain and enhance the health and wellbeing of the local community, including economic and social wellbeing.	Number of complaints	During construction phases	Anglian Water to collect information on complaints during construction at project level.
To secure resilient water supplies for the health and wellbeing of the community.	% of people with deficits for each WRMP	Annually	Anglian Water already collect information on water supply performance.
To increase access and connect customers to the natural environment, provide education or information resources for the public.	Number of PRoW closures or diversions Number, type, and area of community assets created Km of new footpath/cycleway created	During construction phases Post-construction	Anglian Water to collect data to monitor any difference between predicted and actual impacts.
Maintain and enhance tourism and recreation.	Number of tourism assets created	Post-construction	Anglian Water to collect visitor numbers to existing recreational sites (e.g. Water Parks)
To reduce or manage flood risk, taking climate change into account.	% projects with flood risk mitigated	During construction	Anglian Water already collect and report data on properties that experience flooding from public sewers, which could supplement this information to help identify if any flood risks have increased.
To enhance or maintain surface water quality, flows and quantity.	Water quality of surface and ground water Chemical status of water bodies The monitoring of river flows (to inform surface water abstraction approach)	Annually	Anglian Water to access publicly available information and / or commission studies where project-level risks are identified. Anglian Water to work with Environment Agency to understand river flows and any impacts on available abstraction.
To enhance or maintain groundwater quality and resources.	Number of geological sites affected Groundwater quality testing.	Annually	Anglian Water to access publicly available information and / or commission studies where

SEA Objective	Proposed Indicators	Proposed Timescale	Commentary
	Groundwater levels		project-level risks are identified.
To meet WFD objectives and support the achievement of environmental objectives set out in River Basin Management Plans.	Achievements against WFD objectives	Annually	Anglian Water to access publicly available information and review level of performance against WFD objectives in order to identify project-level sensitivities.
To increase water efficiency and increase resilience of water supplies and natural systems to droughts.	Number of supply restrictions per annum	Annually	Anglian Water already collect and report data on supply restrictions.
To protect and enhance the functionality and quality of soils, including the protection of high-grade agricultural land, and geodiversity.	Area of agricultural land (by grade) lost to WRMP options	During construction	Anglian Water to record area of land that is required for development by projects.
To reduce and minimise air emissions during construction and operation.	Local air quality monitoring	During construction	Anglian Water could consider recording information on vehicle movements and compliance with designated construction traffic routes. Project air quality assessments to identify sensitive receptors where monitoring may be required.
To minimise/reduce embodied and operational carbon emissions.	Reduction of greenhouse gas emissions per Ml/d Energy use from new operations and change in energy use per Ml/d % energy supplied by renewable sources Reduction of operational and capital carbon emissions Number of options that utilise existing infrastructure Volume of waste generated Waste disposal method by %	Annually	Anglian Water already collecting information as part of monitoring progress toward Net Zero Strategy.
To introduce climate adaptation measures where required and improve the climate resilience of assets and natural systems.	% of climate risks mitigated	Every five years	Anglian Water already collect information on different types of flooding (internal / external) and this could be used to identify areas where resilience of the assets is not being achieved.
To conserve/ protect and enhance the historic environment including the significance of designated	Number of historic assets damaged by a WRMP option	During and post-construction	Anglian Water to collect information at project level on cultural, historic and industrial heritage. Access

SEA Objective	Proposed Indicators	Proposed Timescale	Commentary
and non-designated cultural heritage (including archaeology and built heritage), including any contribution made to that significance by setting.	Number of historic assets enhanced by options		information from Historic England on condition of protected features. Anglian Water to record actions that have avoided or enhanced historic assets.
To conserve, protect and enhance landscape and townscape character and visual amenity.	Number of WRMP options including additional landscaping	Post-construction	Anglian Water could record the amount of landscaping provided and the number of complaints received regarding visual amenity.
Minimise resource use and waste production.	% 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 %	Annually	Anglian Water to collect information on material and waste
To avoid negative effects on built assets and infrastructure (including green infrastructure).	Number of complaints Number of road closures or diversions	During construction	Anglian Water to collect information during construction period.

10.2 Next steps

10.2.1 Following adoption of the rdWRMP24, a Post-Adoption Statement will be produced which confirms how the SEA process has influenced the development of WRMP, how any additional comments were taken into consideration and how the WRMP will be monitored. This summary will provide enough information to make it clear how the WRMP24 was influenced as a result of the SEA process and consultation.

10.2.2 Initial monitoring proposals have been developed as part of the SEA process and presented in Table 10.1, above. They will be reviewed and finalised in the Post-Adoption Statement and included in Anglian Water's implementation of WRMP24. It is likely that monitoring of the WRMP24 will be incorporated with wider monitoring processes.

A. SEA Option Assessments

A.1.1 *Available upon request*

B. Scoping Report Consultation Log

B.1.1 Provided as a standalone report.

C. Policies Plans and Programmes Review

C.1.1 Provided as a standalone report.

D. Baseline Review and Baseline Maps

B.1.1 Provided as a standalone report.

E. Non-Technical Summary (NTS) – Provided as a Standalone Report

Sub Reports – Other

A. Habitats Regulation Assessment (HRA)

B. Water Framework Directive (WFD) Assessment

C. Biodiversity Net Gain (BNG) and Natural Capital Assessments (NCA)

D. INNS Risk Assessment

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