Anglian Water WRMP24 Environmental Report

Sub-Report B - Water Framework Directive (WFD) Assessment

August 2024

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Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	01/12/22	Various	Checked	Approved	Report for draft WRMP24
B	23/09/23	Various	Checked	Approved	Report for revised draft WRMP24 following review
C	02/08/24	Various	Checked	Approved	Report for WRMP24

Document reference: 100421065-021-L0-WRMP-MML-RP-EN-0540 | C |

Information class:

Contents

Tables

Figures

Table of Acronyms

ACWG	All Company Working Group
A/HMWBs	Artificial and Heavily Modified Water Bodies (HMWBs)
AMP	Asset Management Plan
AWB	Artificial Water Body
AWS	Anglian Water Services
BAU+	Business as usual plus
BNG	Biodiversity Net Gain
BVP	Best Value Plan
Cambs	Cambridgeshire
DCO	Development Consent Order
DO	Deployable Output
EA	Environment Agency
EFI	Environmental Flow Indictor
ERF	Energy Recovery Facility
GEP	Good Ecological Potential
GWDTE	Groundwater Dependent Terrestrial Ecosystem
HDD	Horizontal Directional Drilling
HMWB	Heavily Modified Water Body
HOF	Hands Off Flow
HRA	Habitats Regulation Assessment
HS2	High Speed 2
IDB	Internal Drainage Board
INNS	Invasive Non-Native Species
LCP	Least Cost Plan
LPA	Local planning allocation
Ml/d	Megalitres Per Day
MPPA	Million Passengers Per Annum
MRF	Minimum Residual Flow
MWe	Mega Watts Of Electrical Output
MWt	Mega Watts Of Thermal Output
NCA	Natural Capital Assessment
NSIP	Nationally Significant Infrastructure Project
OPI	Overriding public interest
PBDE	Polybrominated Diphenyl Ethers
PFOS	Polyfluoroalkyl Substances
PoM	Programme Of Measures
PS	Pumping Station
PWS	Public Water Supply

RAPID	Regulators' Alliance For Progressing Infrastructure Development
RA	Recent Actual
RAA	Recent Actual Average (Abstraction Rates)
RBMP	River Basin Management Plan
RDF	Refuse Derived Fuel
RNAG	Reasons For Not Achiving Good
SEA	Strategic Environmental Assessment
SR	Service Reservoir
SRO	Strategic Resource Option
SSSI	Site Of Special Scientific Interest
WFD	Water Framework Directive
WINEP	Water Industry National Environment Plan
WPA	Water Permit Allocation
WRC	Water Recycling Centre
WRE	Water Resources East
WRSE	Water Resources South East
WRMP	Water Resources Management Plan
WRZ	Water Resource Zone
WTW	Water Treatment Works

Executive summary

Introduction

As a water company, 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. This creates a 'best value' plan. Anglian Water's WRMP 2024 (WRMP24) renews the previous WRMP published in 2019.

In developing the WRMP24, Anglian Water have undertaken a Water Framework Directive (WFD) assessment of the potential effects of the WRMP24 on WFD objectives. The UK WFD regulations are set out in The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (known as the WFD Regulations).

This WFD report presents the findings of the WFD assessment work undertaken as part of the development of Anglian Water's WRMP24. The report is part of a suite of environmental assessment documents and forms a sub-report of the Environmental Report. The WFD assessment results fed into both the plan-making process and the Strategic Environmental Assessment (SEA) to ensure that an integrated approach to environmental assessment has been followed.

Whilst option level environmental assessment is essential for producing a constrained list and facilitating decision making, this report also sets out the consequences of the WRMP as a whole on WFD compliance. Environmental and social considerations have influenced the development of the WRMP24 plan. The plan is influenced by a number of aspects which dictate the expected future supply demand balance within the region, these include:

- Activities in specific catchments to improve water abstraction related environmental problems – known as Water Industry National Environment Plan (WINEP).
- Policy Decisions, including:
  - Level of demand management
  - Timing of licence capping
  - Timing of 1 in 500 year drought resilience
  - Level of environmental destination
  - Level of environmental ambition (timing and profile of environmental destination)

The requirement for supply-side options is driven, at least in part, from the requirement to reduce abstraction to protect the environment, as set out above. The WRMP process has considered hundreds of supply-side options. The majority of options that provide new sources of water present potential risks to WFD compliance (on a precautionary basis). Therefore, taking into account the requirement for additional water supply due to the policy decisions and WINEP, there was limited potential for a WRMP24 which did not lead to some risks under WFD.

The approach to WFD assessment

The key WFD objective is for all water bodies to attain good status. The WFD Regulations set out requirements to prevent deterioration of the status of designated water bodies, and to ensure no impediment is introduced which could prevent the attainment of future water body objectives. These objectives are set out in regulation 13 of the WFD.

Any new water resources development, in addition to existing operations, must not compromise the WFD objectives (whether for surface water or groundwater). WFD objectives have been reviewed for the WRMP24 to assess the WRMP24 Plan. Objectives are defined for 'natural' and heavily modified/artificial water bodies and the standard objective is to meet good status or potential.

Exemptions are defined within the WFD Regulations in regulations 16 to 19, outlining the conditions under which the achievement of good status or potential may be phased or may not be achieved, or under which deterioration may be allowed. In particular, regulation 19 allows for deterioration of status, or non-achievement of good status or potential under certain conditions. If any part of the plan would lead to a risk of water body status deterioration and cannot be mitigated, then a regulation 19 derogation application would be required.

For the WRMP24, WFD assessments have been undertaken using a sequential process as follows:

- Overview of the WFD benefits derived through policy decisions that have driven the requirements of the WRMP24 plan.
- Option assessment of WFD compliance – screening of options and where necessary more detailed assessment.
- Production of a WFD compliance statement for the preferred plan.
- Undertaking an in-combination assessment of the preferred plan.

Two levels of WFD options assessment have been undertaken: a simple screening using an automated spreadsheet tool (Level 1) and a more detailed assessment (Level 2) which includes professional judgment.

For the WRMP24, the Best Value Plan (referred to from this point as Plan B) includes 50 supply-side options, two of which are Strategic Resource Option (SRO) projects[1]. In addition, five WINEP mitigation options which will be implemented have also been assessed.

WFD assessment of WRMP24

Overall, the WRMP24 Plan B includes 50 supply-side options, five WINEP options and licence capping.

A high-level consideration of WFD compliance has been undertaken for policy decisions including licence capping and is set out in Section 1.5. The wider environmental benefits associated with these policy decisions (including the cumulative effects when considering other strategic plans in relation to the WFD) is also provided within the Environmental Report.

For the WRMP24, in addition to WINEP options, policy decisions have set out the requirement to cap abstraction licences, driven by the Environment Agency's WFD no deterioration policy. The Environment Agency has suggested reducing licences to recent actual average for time limited licences between 2022-2024 and for permanent licences by 2030. However, further assessment of the supply-demand balance completed between dWRMP24 and WRMP24 has shown that delivery of this baseline scenario would be unfeasible.

For the WRMP24 Plan B an alternative scenario will reduce licences to recent actual peak (for time limited licences between 2022-2024 and for permanent licences by 2025), then to recent actual average on a phased approach as alternative supply options become available. Therefore, there will be a period up until 2030 (for time limited licences) and 2036 (for permanent licences) where some licences would continue to operate at existing rates within their licenced levels. In this period, there may be a need to abstract above the recent annual average. It is not accepted or evidenced that this would necessarily cause deterioration; nevertheless, even if a regulation 19 case were to be required it is explained how this would be satisfied. Anglian Water will still remain obliged to avoid the risk of deterioration due to a sustained increase in abstraction and cannot use the margin to support growth. Therefore, the risk of an increase in abstraction, which could potentially lead to a risk of WFD deterioration would be low. A licence review would be

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

undertaken for any abstraction increases above recent actual peak required during this period, and if necessary, an application for a derogation under regulation 19 would be submitted to the Environment Agency for consideration on a case-by-case basis.

For options level assessment (methodology in Chapter 1.7), the Level 1 assessment (results in Chapter 2) indicates that over half of the 56 options in the WRMP24 (28 supply-side options and four of the WINEP mitigation measures options) have a very low risk of impacting WFD objectives. At this point in time these options do not merit further assessment.

WFD Level 2 assessments (results in Chapter 3) were completed for 23 options (22 supply-side options and one WINEP option). Two of these were conducted under the relevant SRO Regulators Alliance for Progressing Infrastructure Development (RAPID) gated process, and one has been assessed separately in the drought plan[2]. Summaries of these assessments are provided in this report.

The WFD Level 2 assessments showed that six of the 23 options present very low risks to WFD compliance. Therefore, these options are considered to be compliant with the WFD, and do not merit further assessment at this stage.

On a precautionary basis, risks to WFD compliance were identified for the remaining 17 options, prior to consideration of mitigation and further development. Of these 17 options, professional judgement has supported the assessment to conclude that at a plan level:

- Two options; generic good practice and specific mitigation has been identified within the assessment which is anticipated will ensure WFD compliance.
- Five options; generic good practice mitigation has been identified in this assessment. Following recommended further investigations to provide evidence to support the professional judgment used at this stage, it is anticipated that the WFD risk will be reduced and the options will be WFD compliant.
- Ten options; generic good practice mitigation has been identified at this stage. Following recommended further investigations (to provide evidence to support the professional judgment used) and design development, it is anticipated that further specific mitigation will be identified to reduce the risk, and therefore options will be WFD compliant.

Options assessment at this stage has used high level design information, and as options are taken forwards additional refinements and assessment would be completed as they progress to further development. The information is considered appropriate at this stage of the plan level and does not affect the robustness of the assessment.

Across the WRMP24, 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 (SRO) and Fens Reservoir (SRO) 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.

Cumulative Effects Assessment

It is recognised that there is potential for cumulative effects to WFD water bodies due to the implementation of WRMP24 Plan B alongside planning applications (including planning allocations, planning applications and Nationally Significant Infrastructure Projects (NSIPs)) and other water company dWRMP24s. A cumulative effects assessment has therefore been undertaken and is set out in Chapter 4.

The cumulative effects assessment identified 59 WFD water bodies which could be affected by one or more Plan B option and one or more planning project and/or other water company dWRMP24 options. For the majority of the water bodies, the cumulative effects assessment does not identify an increased risk to WFD compliance. However, some potential for increased WFD compliance risk was identified in 17 water bodies.

[2] Anglian Water Drought Plan 2022, April 2022: aws-drought-plan-2022.pdf (anglianwater.co.uk)

These assessments are based on the limited data available on planning applications, and on existing published information within other water company dWRMP24s but are considered proportionate to indicate risks at the plan level.

WFD compliance position and next steps

On the basis of the assessment completed at the plan level, the options in the WRMP24 Plan B are considered to be compliant with WFD objectives. Given that this assessment is at a strategic plan level the scoring of WFD risks has been undertaken based on reasonable professional judgment at this stage.

Detailed investigations along with generic and good practice mitigation measures have been clearly set out in the assessment, and the conclusions on WFD compliance of the options at a plan level assume these investigations will have been concluded and sufficient mitigation will be in place. More detailed WFD assessments will need to be undertaken at the project-level design development stage, prior to and as part of application for consent.

1 Introduction and overview

1.1 Water resource management planning

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

1.1.1.2 As a water company 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.

1.1.1.3 In the development of a WRMP, companies in England and Wales must follow the Environment Agency /Ofwat Water Resources Planning Guideline (WRPG),[3] and consider broader government policy objectives and adhere to the relevant legislation. Anglian Water's plan-making for WRMP24 has undertaken all six environmental assessments that were highlighted in the WRPG. The broad scope of the Strategic Environmental Assessment (SEA) process has been used as a framework to integrate the findings of the other environmental assessments to avoid duplication and inconsistency across the specific requirements of each assessment:

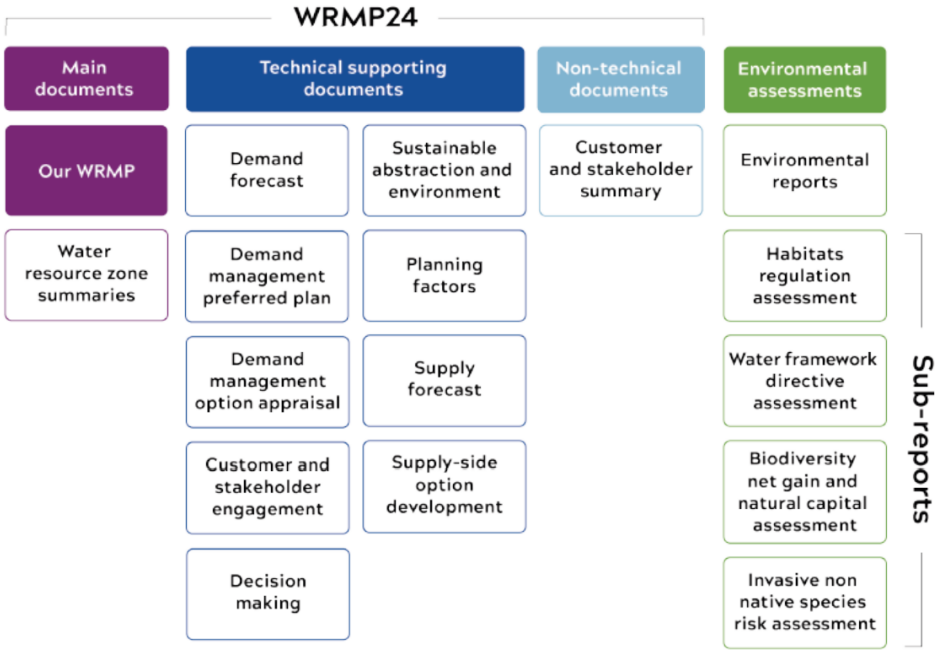
- Habitats Regulations Assessment (HRA)
- Water Framework Directive (WFD) assessment
- Natural Capital Assessment via Ecosystem Services (NCA)
- Biodiversity Net Gain (BNG) assessment (BNGA)
- Invasive Non-Native Species (INNS) risk assessment

1.1.1.4 The development of a WRMP is a complex process involving the analysis of different types of information and data, the application of modelling and decision-making, and interacting, as required, with the six environmental assessments above. To read more about the plan-making process, please visit the suite of WRMP24 reports for more information on each aspect (Figure 1.1).

1.1.1.5 This WFD report sits within the suite of Environmental assessment documents that accompany the WRMP24. The assessment process undertaken to generate it feeds into the plan-making process as part of the Anglian Water's best value planning (BVP) approach, discussed below.

[3] Environment Agency, Natural Resources Wales, Office for Water Services (2023). Water resources planning guideline. Available at: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline

Figure 1.1: The WRMP24 reports



Source: Anglian Water

1.2 Anglian Water's WRMP24 challenge

1.2.1.1 Anglian Water's geographic area is divided into 28 Water Resource Zones (WRZs) including the Hartlepool area and the South Humber Bank which is a non-potable WRZ that sits within the Central Lincolnshire WRZ. It should be noted that Hartlepool is not covered further 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. Assessment of demand management is reported in Chapter 5 of the WRMP24 Environmental Report.

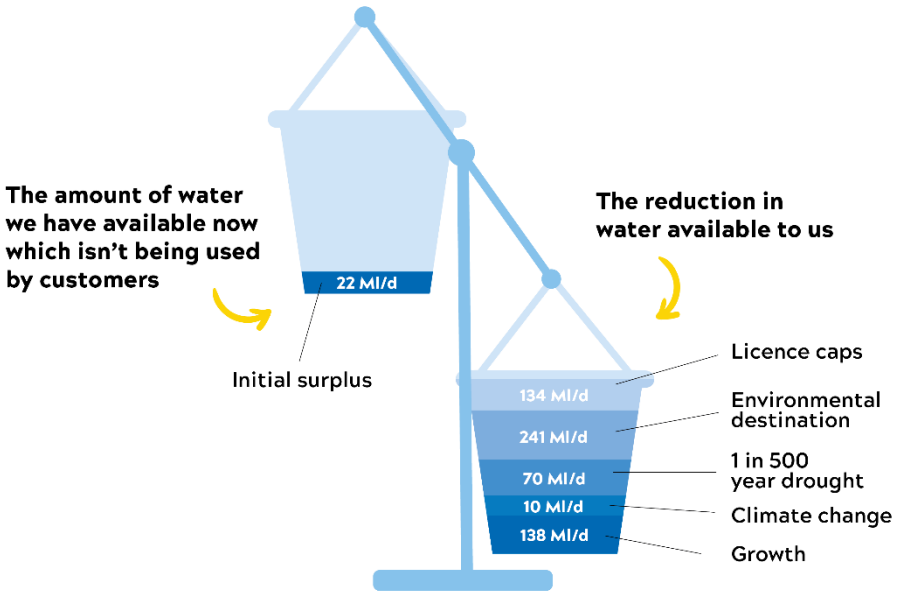
1.2.1.2 The East of England is one of the driest regions in the UK, receiving only two thirds of the national average rainfall each year, (approximately 600mm), with high evaporation losses. Water supply is under pressure from multiple challenges. The supply and demand forecast upon which the WRMP24 is based must account for all these challenges, including population growth, climate change, licence capping (i.e., licence capping, environmental destination and ambition) and the need to increase resilience of water supplies to severe drought.

1.2.1.3 The WRPG sets out the requirements for developing the WRMP24. 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, and which influence the WRMP24 environmental outcomes (the assessment of which are presented in the WRMP24 Environmental Report, within Chapters 5 and 6). The policy decisions are:

- Level of demand management
- Timing of licence capping
- Timing of 1 in 500 year drought resilience
- Level of environmental destination
- Level of environmental ambition (timing and profile of environmental destination)

1.2.1.4 The combined effects of the challenges influence the change in the amount and timing of water available to Anglian Water to deliver secure public water supplies throughout the planning period (2025-2050). The combination of these challenges (Figure 1.2) indicates that WRMP24 must deliver well over 400Ml/d of new demand management and supply-side infrastructure through the planning period in order to deliver the statutorily required supply-demand balance.

Figure 1.2: The impact of expected challenges for Anglian Water's WRMP24



Source: Anglian Water

1.3 Anglian Water's WRMP24 plan-making

1.3.1.1 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 at all times throughout the planning period (2025-2050).

1.3.1.2 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.

1.3.1.3 The objective led approach of the SEA has been used to assess the WRMP24 demand management as it is well suited to assessment activities with a broad scale effect. However, the five other environmental assessments require specific geographic location to base the assessment upon. For further information on the assessment of demand management can be found in Chapters 5, 6 and 7 of the Environmental Report.

1.3.1.4 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 licence capping, 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.

1.3.1.5 Supply-side options produce new, additional water that can be put into the water network to supply customers. The types of supply-side options available to Anglian Water on their constrained list to deliver WRMP24 are:

- Aquifer storage and recovery
- Backwash recovery
- Conjunctive use
- Desalination
- Groundwater treatment
- Reservoirs
- Tankering
- Transfers
- Trading
- Water reuse
- Water treatment works

1.3.1.6 The environmental assessments applied to the WRMP24 have influenced the components of the constrained list and in some cases, they have contributed to the removal of potential supply-side options (for more information see the WRMP24 Supply-side options development technical support document).

1.3.1.7 In addition to the above, the six environmental assessments completed have produced environmental metrics which have formed part of the BVP framework, thus, being used throughout the decision-making process. To read more about the environmental assessment metrics, please visit Chapter 5 of the Environmental Report and the WRMP24's Decision making technical supporting document.

1.3.1.8 Whilst option level environmental assessments are essential for producing a constrained list and facilitating decision making, there must be a focus on the environmental consequences of the WRMP as a whole plan.

1.3.1.9 It is also important to recognise the strategic plan level of the WRMP24 and that, following adoption of the WRMP24, 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.

1.4 WFD Regulations

1.4.1.1 The Water Framework Directive (WFD) was introduced into UK law in 2003. The latest regulations are set out in The Water Environment (Water Framework Direction) (England and Wales) Regulations 2017[4] (known as the WFD Regulations). These regulations require all water bodies (both surface and groundwater) to achieve 'good status'. For surface water bodies good status is a function of good ecological status (biological, physico-chemical and hydromorphological elements and specific pollutants) and good chemical status (Priority Substances and Priority Hazardous Substances). For groundwater good status is a function of quantitative (surface water, groundwater dependent terrestrial ecosystems (GWDTE), saline intrusion and water balance) and chemical status (dependent surface water body, drinking water protected areas, GWDTE, saline intrusion and general chemical). Groundwater level changes which are considered in this assessment may also have implications for archaeology. These are considered further in the WRMP24's Environmental Report.

1.4.1.2 The WFD Regulations require that the water bodies experience no deterioration in status and no impediment is introduced which could prevent the achievement of future water body objectives

[4] The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (legislation.gov.uk)

and good status. The WFD Regulations promote long-term sustainable water management, with the key objective of providing a high level of protection to the aquatic environment, including:

a. Aquatic ecology
b. Unique and valuable habitats
c. Drinking water resources
d. Bathing water

1.4.1.3 All the key objectives are integrated for each river basin, with objectives b, c and d above reflecting specific bodies of water that are designated for supporting special wetlands, drinking water abstraction, or bathing areas.

1.4.1.4 The WFD Regulations, regulation 13, sets out the “environmental objectives” for natural surface and groundwater bodies, and artificial water bodies (AWB) and heavily modified water bodies (HMWBs). Natural surface water bodies must, by 2015, adhere to good ecological and chemical status and groundwater bodies to good quantitative and chemical status. Artificial and HMWBs (A/HMWB) must achieve good ecological potential and good chemical status. Regulation 13 also sets out the principle of no deterioration, providing protection from the deterioration of water status/potential. The WFD Regulation, regulation 15, sets out the criteria for the designation of artificial or heavily modified water bodies.

1.4.1.5 Exemptions are defined within the WFD Regulations, regulation 16 to 19, outlining the conditions under which the achievement of good status or potential may be phased or may not be achieved, or under which deterioration may be allowed. Regulation 16 to 19 describe these distinct conditions. In summary:

- Regulation 16 allows an extension of the time limit so that good status or potential is, under certain conditions, achieved after 2015
- Regulation 17 allows the achievement of less stringent objectives under certain conditions
- Regulation 18 allows the temporary deterioration of status in case of natural causes or “force majeure”
- Regulation 19 allows for deterioration of status or non-achievement of good status or potential under certain distinct conditions. If any options are identified as leading to a risk of water body scale deterioration that cannot be mitigated, then a regulation 19 derogation application would be needed. Where a regulation 19 exemption application is needed, various tests must be passed including:
  - The benefits of the option cannot be achieved by a significantly better environmental option.
  - All practicable steps have been taken to mitigate the adverse effects on the water body.
  - The reasons for the modifications or alterations are explicitly set out in the River Basin Management Plan (RBMP).
  - There is an overriding public interest in the proposed development and/or its benefits outweigh the benefits of delivering the WFD objectives.

1.5 Approach to WFD Compliance for Policy Decisions supporting WRMP24

Overview

1.5.1.1 Numerous policy decisions have been considered during the preparation of the WRMP24 (see WRMP24 Decision Making Report technical support document and the WRMP24 Environmental Report, within Chapters 5 and 6).

1.5.1.2 A detailed WFD assessment has not been undertaken for each of these policy decisions, however a high-level review of the anticipated WFD effects derived is set out in the sections below.

1.5.1.3 The wider environmental benefits associated with these policy decisions (including the cumulative effects when considering other strategic plans in relation to the WFD) is provided within the Environmental Report. These benefits have been summarised to contextualise the policy drivers behind the requirement of the WRMP24. These policy drivers will have a significant beneficial effect on the WFD, supporting the attainment of water body objectives across the Anglian Water Region. However, these policy drivers have also driven the requirement for the WRMP24 to deliver a combination of over 500Ml/d of new demand management and supply-side infrastructure to deliver the statutorily required supply-demand balance in 2050. This is required to ensure Anglian Water can still deliver secure public water supplies throughout the 2025-2050 plan period.

1.5.1.4 To deliver this infrastructure, numerous potential supply-side options were produced (see the Supply-Side Option Development technical supporting document). Individual WFD option assessments were completed for all supply-side options on the constrained list using spatial data (see section 1.7 for methodology). This was undertaken to assess the WFD compliance of the individual supply-side options, to inform the plan selection (see section 1.3) and the overarching WFD assessment findings of the WRMP24 (see section 3.1).

Demand management

1.5.1.5 Anglian Water modelled four demand management portfolios, comprised from complementary elements of leakage reduction, smart metering and water efficiency interventions. Further information on the demand management options is within section 5.3 of the Environmental Report.

1.5.1.6 Following consultation on the dWRMP24, Anglian Water reviewed and revised its policy decision in relation to demand management moving from the Enhance Plus portfolio to the Aspirational portfolio across all four of the plan alternatives developed for the WRMP24.

1.5.1.7 Once implemented, demand management options reduce the need for a comparable volume of water to be generated from additional new supply. For instance, 50Ml/d saved through demand management measures, reduces the associated need for that water to be provided. This results in positive effects for the WFD as it reduces the amount of water required from supply-side options (through abstraction and drought management), therefore leaving more water within the environment. This aligns with the WFD Regulation framework which outlines a requirement for measures to promote use of water efficiently and in a way that can sustain future supplies.[5]

Licence capping

1.5.1.1 The licence capping set by the policy decisions, requires capping of abstraction licences, driven by the Environment Agency's WFD no deterioration policy. To ensure abstractions across the Anglian Water region remain sustainable and comply with WFD, abstraction licence limits will be reduced to annual average 'recent actual' (RA) quantities. This will remove any potential risk of deterioration to water bodies from increasing abstraction rates within current licence conditions but above RA.

1.5.1.2 The baseline scenario (scenario 6) was used for the dWRMP24 (Decision Making Technical support document) and required licence capping to RA annual average for time limited licences between 2022-2024 and for permanent licences by 2030 (Table 1.1). Assessment of the supply-

[5] River basin planning programmes of measures: mechanism summary: River basin planning programmes of measures: mechanisms summary - GOV.UK (www.gov.uk)

demand balance completed between dWRMP24 and WRMP24 has shown that delivery of this initial scenario would be unfeasible. This is due to a supply deficit arising from a reduction in abstraction licences from other drivers, requirements for maintenance or emergency shutdowns, climate change and droughts. In order to maintain resilience of supply, alternative scenarios were considered for agreement with the Environment Agency. This led to the rejection of the use of the baseline scenario and a decision to use scenario 4 (shown in Table **1**.1 below) for the purposes of considering plans A to C in the WRMP24. Following consultation responses, an additional bespoke scenario (scenario 8) was adopted for the purposes of considering Plans B, C and D, whereas Plan A continued to be considered against scenario 4. The comparison of the additional levels of water abstraction as between the baseline and scenarios 4 and 8 are shown in Figure 1.3 below. It can be seen that, compared to scenario 4, scenario 8 reduces the amount of water that would continue to be abstracted when compared to the baseline.

1.5.1.3 The WRMP24 Plan B scenario is based on a phased approach, designed to firstly cap licences at RA peak (between 2022-2024 for time limited licences and by 2025 for permanent licences), before later capping licences at RA annual average (by 2030 for time limited licences and between 2030-2036 for permanent licences) (Table 1.1). During the period 2030-2036, licences would be capped as supply-side options are implemented to provide the water required to maintain resilience.

Table 1**.1: Summary of the licence capping scenarios**

Scenario	**Capped at RA peak**		**Capped at RA annual average**	
	Time limited licence	Permanent licence	Time limited licence	Permanent licence
Baseline (scenario 6)	-	-	2022-2024	2030
Scenario 4	2022-2024	2025	2030	2036
Plan B (scenario 8)	2022-2024	2025	2030	2030-2036

Figure 1.3: Adjustments (Ml/d) required on scenario 4 and 8 relative to baseline scenario 6

	2025	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
S4	73	73	73	73	73	61	61	61	61	61	61	0
S8	73	73	73	73	73	52	51	41	41	41	33	0

OPI for not capping time limited licences
OPI for not capping permanent
All licences capped to recent actual annual average

Source: Anglian Water

1.5.1.4 For the Plan B scenario, there will be a period of time where licences would be capped at recent actual peak before being reduced to recent actual average (Table 1.1). During that period, if there is a sustained increase in abstraction above the average levels which is shown to give rise to deterioration risk, this may require an overriding public interest derogation under regulation 19 on a case-by-case basis, depending on licence specific investigations at the time. If necessary, an application for a derogation under WFD regulation 19 on the basis of overriding public interest would be submitted to the Environment Agency. The likelihood of an increase in abstraction leading to a risk of permanent WFD deterioration would be low.

1.5.1.5 The differences between the amount of water available for Anglian Water to abstract as between scenario 6, which Anglian Water used as the baseline for the dWRMP, and scenario 8

which is utilised in WRMP24 is shown in the Table 1.1. This shows an additional 73Ml/d available for abstraction for the period 2025 to 2029 thereafter tapering downwards to 0Ml/d in 2036. It is not accepted that the changes in the amount of water that can be abstracted between scenario 6 and scenario 8 necessarily causes deterioration or presents a risk of that, nor that the use of scenario 8 automatically gives rise to the need for a WFD regulation 19 derogation. However, even if a case of overriding public interest (OPI) is required in order to amend or alter its caps, it is clear from the documentation that comprises this plan that OPI would be satisfied. The Decision Making Report technical supporting document and the WRMP itself demonstrate that all the component parts of Plan B, which includes the approach to licence capping contained in scenario 8, have been rigorously assessed, both through modelling and the use of expert professional judgment, initially against least cost parameters and then against Best Value Metrics. These documents demonstrate that all the component parts of the plan are necessary in order to provide the Best Value Plan for the planning period which will ensure maintenance of a supply demand balance across that period and is the optimum way to enable Anglian Water to meet its statutory obligations to develop and maintain an efficient and economic water supply for those who demand it.

1.5.1.6 On balance, over the course of the plan period the reduction in sensitive abstractions is anticipated to deliver a significant benefit in WFD terms.

Timing of 1 in 500 year drought resilience & environmental ambition

1.5.1.7 To deliver long-term sustainability and environmental resilience, Anglian Water have identified an environmental destination scenario and Environmental Ambition strategy within the WRMP24. This process is explained in Chapter 5 of the over-arching Environmental Report. Further details are provided in Chapter 3 of WRMP24's Decision Making Report technical supporting document, with the application of the metrics presented in the analysis within later chapters.

1.5.1.8 In the WRMP24, this environmental destination BAU+ sets out to achieve flows to support 'Good Ecological Status' under the WFD and includes abstraction reductions to protect European protected sites. This scenario does not include water bodies where improvements are assessed as uneconomic to recover by the Environment Agency's Abstraction Plan by 2027. The BAU+ delivers 241Ml/d of water to the environment through reductions to deployable output. This will lead to significant improvements for WFD in a large number of water bodies.

1.5.1.9 The outcome of these decisions results in limits on abstractions, reducing deployable output (DO) and thus affects which supply options are selected in the WRMP24, as well as their size (DO) capacity and timing.

1.5.1.10 In addition, to ensure abstractions are sustainable, sustainability reductions to abstraction licences will be applied. This will mean a reduction in abstraction licences of 181.9Ml/d with a corresponding volume of water potentially being retained within the environment. Timing is also considered within the licence capping scenario, further assessment of this is included in Section 1.5 of this report. As with the environmental destination these policy decisions reduce the deployable output and necessitates a greater volume of water needed from new supply options in the WRMP24.

1.5.1.11 The requirement for the supply-side options is driven, at least in part, from the requirement to reduce abstraction to protect the environment, as set out above in the Overview of Section 1.5.

1.6 Best Value Plan (Plan B)

1.6.1.1 Taking into account these requirements set out, the 50 supply-side options which have been selected to form the WRMP24 Best Value Plan (Plan B) are listed in Table 1.2. In addition, five WINEP options are also required and are listed in Table 1.3.

Table 1.2: WRMP24 Plan B options

Option ID	Description	Origin of assessments completed if required
CAM4	Ruthamford South to Cambridge Water potable transfer (50Ml/d)	-
LNC25	Lincolnshire East to Lincolnshire Central potable transfer (29Ml/d)	-
EXC3	Essex Central to Essex South potable transfer (10Ml/d)	-
EXC7	Backwash water recovery, Essex Central WTW (0.3Ml/d)	-
FND26	Backwash water recovery, Fenland WTW (0.2Ml/d)	-
FND22	Marham abstraction (7.9Ml/d up to 2039, 12.3Ml after 2039)	-
LNC30	Lincolnshire Central WTW Upgrade (3.2Ml/d)	-
LNE11	Lincolnshire East Groundwater (7.5Ml/d)	-
LNE12	Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039)	-
LNN3	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d)	-
NAY1	Norwich and the Broads to Aylsham potable transfer (3Ml/d)	-
NBR6	Fenland to Norfolk Bradenham potable transfer (50Ml/d)	-
NEH3	Suffolk Thetford to Norfolk East Harling potable transfer (5Ml/d)	-
NHL4	Norfolk East Harling to Norfolk Harleston potable transfer (5Ml/d)	-
NTB10	Norfolk Bradenham to Norwich and the Broads potable transfer (20Ml/d)	-
RTS16	Ruthamford South Drought permit (2.07Ml/d)	Assessed under Drought plan 2022
RTS21	Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040)	-
SUE23	Suffolk East WTW Upgrade (1.7Ml/d)	-
SUE24	Suffolk Sudbury to East Suffolk potable transfer (5Ml/d)	-
SUT6	Suffolk Thetford WTW backwash water recovery	-
SWC8	Cambridge to Suffolk West Cambs Potable Water Transfer (50Ml/d)	-
SWC13	Suffolk West & Cambs groundwater relocation (2.6Ml/d)	-
EXS7	Backwash water recovery, Essex South WTW (0.3Ml/d)	-
NBR9	Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d)	-
NNC5	North Norfolk Coast WTW backwash water recovery (0.18Ml/d)	-
NNC6	North Norfolk Coast WTW backwash water recovery (0.2Ml/d)	-
LNE3	Backwash water recovery, Lincolnshire East WTW (1.3Ml/d)	-
NAY4	Backwash water recovery, Norfolk Aylsham WTW (0.75Ml/d)	-
NED3	Backwash water recovery, Norfolk East Dereham WTW (0.1Ml/d)	-
NHL7	Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d)	-
NAY5	Backwash water recovery, Norfolk Aylsham WTW (0.1Ml/d)	-
EXS19	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4Ml/d up to 2039, 13.9Ml/d after 2039)	-
SUT5	Norfolk Bradenham to Suffolk Thetford (15Ml/d)	-
SUE25	Backwash water recovery, Suffolk East WTW (0.17Ml/d)	-
LNN1	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3Ml/d)	-
NED2	Norfolk Bradenham to Norfolk East Dereham potable transfer (10Ml/d)	-
NNC4	Norfolk East Dereham to North Norfolk Coast potable transfer (10Ml/d)	-

Option ID	Description	Origin of assessments completed if required
SHB9	South Humber Bank Non-potable desalination (60Ml/d)	-
FND29	Fens Reservoir 50MCM (usable volume) (44.4Ml/d)	Assessed under SRO Regulators' Alliance for Progressing Infrastructure Development (RAPID) gate process
EXS10	Holland on Sea desalination (seawater) 26Ml/d	-
LNB1	Ruthamford North to Bourne potable transfer (20Ml/d)	-
LNC16	Ruthamford North to Lincolnshire Central potable transfer (20Ml/d)	-
LNC28	Bulk trade agreement – River Trent (7Ml/d)	-
LNE6	Mablethorpe desalination Seawater (50Ml/d)	-
NTB17	Bacton desalination (seawater) 25Ml/d	-
NWY1	Norwich and the Broads to Norfolk Wymondham potable transfer (5Ml/d)	-
RTN30	Lincolnshire Central to Ruthamford North potable transfer (75Ml/d)	-
RTS24	Ruthamford North to Ruthamford South potable transfer (75Ml/d)	-
RTN17	Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)	Assessed under SRO RAPID gate process
RTC3	Ruthamford South to Ruthamford Central potable transfer (20Ml/d)	-

Table 1.3: WRMP24 WINEP options

Option ID	WINEP option name	Comments
Brett	River Support Scheme with 2Ml/d at Lavenham, 2Ml/d at either Semer or Raydon and 2Ml/d at Shelley.	WINEP mitigation to be applied in the WRMP24
Colne	River support from Great Yeldham (at current daily licenced quantity) plus River Restoration.	
Gipping	An optimised combination of river restoration options #11, #12, and #13 (Reach #2 (Brantham Road (B1113), south of Great Blackenham, to the railway crossing west of Ipswich) and reach #3 (from the railway crossing west of Ipswich to the tidal limit).	
Pant	River support from Hawkspur Green source.	
Stiffkey	Houghton St Giles river support to Q90 RA flows at Warham All Saints (18Ml/d).	

1.6.1.2 WFD assessments for additional options which are included in the alternative plans (Plan A, Plan C and Plan D) have been conducted and their WFD risks are discussed in the WRMP24's Environmental Report, of which this WFD document is a sub-report.

1.7 Methodology for assessment of Plan B options

Methodology overview

1.7.1.1 The All Company Working Group (ACWG) has developed a consistent framework for undertaking WFD Regulations assessments[6] to ensure that the WRMP supports the achievement of environmental objectives for water resources in the RBMPs by preventing deterioration and supporting achievement of protected area and water body status objectives, as well as not preventing a water body from reaching 'good' or 'good potential' status in the

[6] All Company Working Group (Nov 2020), WFD: Consistent framework for undertaking no deterioration assessments.

future. The assessment considers mitigation that would need to be put in place to protect water body status and WFD future objectives.

1.7.1.2 Two stages of assessment are completed under the ACWG WFD approach, an initial Level 1 basic screening (section 1.7.1.3) and a Level 2 detailed impact screening (section 1.7.1.6). These are completed using a spreadsheet assessment tool. Level 1 outcomes are automated based on option information and Level 2 outcomes are based on expert judgment. Further information on WFD classification and the approach adopted can be found in the ACWG WFD framework[6].

Level 1 – basic screening of options

1.7.1.3 The first stage of WFD assessment was completed for all supply-side options on the constrained list. The Level 1 assessments follow the methodology set out below:

- The affected water bodies are identified
- The supply-side option is reviewed
- Possible impacts of the supply-side option are identified
- Embedded mitigation measures (those already included in the scheme design) are applied
- A screening score is calculated, using a six-point scale from -2 to 3 (please refer to Table 1.4). When the screening score identified water bodies and supply-side options with a maximum score of -2 to 1, these are 'screened out' and do not proceed to further assessment. If the maximum impact score is greater than 1, then the water body is 'screened in' and assessed at Level 2. This is known as detailed impact screening (please refer to section 1.7.1.6).

1.7.1.4 The WFD Level 1 screening outcomes for the supply-side options on the constrained list are summarised in Chapter 2 of this report and Appendix A. Where water bodies and supply-side option impacts have been 'screened in' at Level 1 and the supply-side option is present in Plan B, a Level 2 assessment has been undertaken.

1.7.1.5 WFD Level 1 screening and Level 2 assessments have also been undertaken for all options appearing in the three alternate plans: Plan A (Least Cost Plan), Plan C (Least Cost Best Value) and Plan D (Best for Environment Plan). These assessments are available on request.

Table 1.4: ACWG WFD impact scoring system used for WFD assessments

Impact	Score	Description
Improvement anticipated at water body scale	-2	Impacts that, taken on their own, have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire water body.
Beneficial	-1	Impacts that, when taken on their own, have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD status of the water body or any quality elements.
Negligible	0	No measurable change in the quality of the water environment or the ability for target WFD objectives to be achieved.
Minor (not significant at water body scale)	1	Impacts that, when taken on their own, have the potential to lead to a minor localised, short-term and/or fully reversible effects on one or more of the quality elements but would not result in a change in the WFD status. Impacts would be very unlikely to prevent any target WFD objectives from being achieved.
Potential deterioration risk	2	Impacts that, when taken on their own, have the potential to lead to a widespread or prolonged effect on the quality of the water environment that may result in the reduction in WFD status. Impacts have the potential to prevent target WFD objectives from being achieved.

Impact	Score	Description
Permanent deterioration risk	3	Impacts when taken on their own would lead to a significant effect and permanent deterioration of WFD status. Potential for high impact on preventing target WFD objectives from being achieved.

Level 2 – detailed impact screening of options

1.7.1.6 The second stage of WFD assessment is more detailed. These Level 2 assessments have been completed for supply-side options that were screened in at Level 1. The Level 2 assessment includes the following steps:

- For each water body where a risk of deterioration has been identified in Level 1, a detailed assessment is undertaken to refine the potential for impacts on each WFD quality element, from each activity proposed as part of the option.
- An assessment of confidence in the assessment is given for the WFD baseline data and the design certainty. These confidence levels are assigned based on the quality and availability of baseline data, and on the amount of design information for the option at the time of assessment *(note, confidence/certainty is expected to be low during this initial WRMP assessment and will increase over time at the project level).* For options where the confidence levels are medium or low, the requirements for further data collection or design detail in order to raise the confidence level in the future are identified.
- Further design and mitigation requirements are identified.
- A 'post mitigation' impact score is assigned, based on professional judgement of the impact once proposed further mitigation, or suitable alternatives, have been included in the design.
- Where the assessment certainty is medium or low, further investigations are identified which would improve the certainty of the assessment outcomes. These may be completed at a project level and fed back into the plan at future updates.

1.7.1.7 The outcomes of the Level 2 assessments undertaken for options within Plan B are summarised in Chapter 3 of this report and the full assessments are presented in Appendix C.

1.7.1.8 Where water bodies and option impacts have been identified, recommendations have been made for increasing the confidence in the assessment. This is expected to be achieved by increasing the level of detail available during option development and the pre-application design process when development consent is sought. In-combination assessments are also required and consist of interdependent option delivery.

WFD assessment of WRMP24

1.7.1.9 The ACWG WFD assessment process is designed to identify where an individual supply-side or WINEP option contained within WRMP24 would lead to a direct risk to a specific water body. There is also the need to consider the potential risk posed by the WRMP24 as a whole, to identify whether more than one option included in the WRMP24 could lead to an increase in deterioration risk to one, or more, water bodies. As such, an additional assessment was undertaken to identify whether any water bodies are considered to be potentially at risk from multiple options included within Plan B.

1.7.1.10 The water bodies that were listed as potentially impacted under more than one Plan B option were identified. The proposed activities associated with all supply-side options within each water body were reviewed to determine if there is an increased risk of WFD status deterioration and a new impact score assigned to the water body. The assessment is based on the WFD Level 1 and 2 assessment outcomes at this stage. As further investigations are conducted and design information becomes available for future updates to the plan, the individual Level 2 WFD assessments will require updates. Following these adjustments, updates to these assessments will be required.

1.7.1.11 Separate assessments have also been completed for the options within the three alternate plans (Plans A, C and D). These assessments are not presented in this report; reporting of the differences between the assessments for the three alternate plans and Plan B are summarised in the WRMP24's Environmental Report, which is informed by this WFD document.

Cumulative effects assessment

1.7.1.12 The cumulative effects assessment has been undertaken to determine the cumulative impact of Plan B option activities, along with any relevant planning projects or other water company options identified on impacted water bodies.

- All planning allocations, planning applications and Nationally Significant Infrastructure Projects (NSIPs) etc, within 500m of the water body have been identified. Any planning projects where no risk of deterioration is identified have been discounted from the assessment. Planning projects where a risk of deterioration has been identified were passed into the next stage of the review. For each planning project, assessment is made on whether the project could lead to impacts on WFD water bodies depending on the information available:
  - For larger NSIPs the review makes use of any existing WFD assessments that have been conducted for the planning application.
  - For other planning allocations or applications where no WFD assessment has been conducted, professional judgement has been used to identify potential for impacts on WFD.

1.7.1.13 In addition, this assessment considers the potential for cumulative effects from other water companies' WRMP24 options. The published draft WRMP24 options from all the water companies which bound the Anglian Water region have been considered in this assessment. It is acknowledged that other water companies are likely to be in the process of producing a WRMP24. The cumulative assessment of all the latest WRMP24 for the various water companies will be considered further under the regional projects (such as WRE).

1.7.1.14 Where one or more WRMP24 Plan B option, other water company option and/or relevant planning projects occur within the same water body, the corresponding option assessments and planning project information have been reviewed. The aim of this review is to determine if cumulative impacts from all proposed activities could lead to an increased risk of WFD deterioration. Where a water body is identified to be at an increased risk of WFD deterioration, a new cumulative WFD assessment is completed, and a new impact score assigned. The cumulative effects assessment is based on the WFD Level 2 assessment outcomes as presented in this report. As further investigations are undertaken and design information becomes available, the Level 2 WFD assessments will be updated. Following these adjustments, updates to the cumulative effects assessment will be required.

1.7.1.15 Separate cumulative effects assessments have been completed for the options within the three alternate plans (Plans A, C and D), the planning projects and other draft WRMP24 options for other water companies. These assessments are not presented in this report; differences between the assessments for the alternate plans and for Plan B are summarised in the WRMP24's Environmental Report, of which is informed by this WFD document.

Limitations and assumptions

1.7.1.16 The impact scoring system used in this assessment is derived from the ACWG document and focusses on screening at a project level. The limitations of this scoring system to assess WFD compliance at the plan/strategic level therefore need to be acknowledged. However, this system has been used to guide this WFD assessment in the manner explained below.

1.7.1.17 As the options set out in the WRMP are in the early stages of design development, a precautionary approach has been exercised in the derivation of WFD compliance risk scoring, following the Level 2 assessment approach. If insufficient evidence was available at the time of assessment to rule out a potential risk of deterioration and/or meeting WFD objectives that has been reflected in the tables provided with this assessment in the maximum impact score column, which reflects the impact scoring system which contains a category of potential deterioration risk.

1.7.1.18 The assessment also includes consideration of potential available mitigation, and these measures are taken into account in a further column which reflects the scoring of 'post-mitigation' impact. This scoring includes an assumption that project level design development (including assessment of any project-level alternatives for different components) will be in line with WFD objectives and subject to ongoing WFD compliance assessment review prior to and as part of application for consent. This scoring approach has considered where a potential deterioration risk is identified whether an adjustment should be made to the impact score taking into account the mitigation measures.

1.7.1.19 Given that this assessment is at a strategic plan level the scoring has been undertaken based on reasonable professional judgment at this stage. The mitigation identified at this stage is generic or best practice in nature, so is understood to have a reasonable level of confidence that it can be applied at a project level.

1.7.1.20 Detailed investigations and mitigation measures have been clearly set out in this assessment, and the conclusions on WFD compliance of the options at a plan level 'post mitigation' assume these investigations will have been concluded and sufficient mitigation will be in place.

1.7.1.21 Clearly more detailed WFD assessments will need to be undertaken at the project-level design development stage.

1.7.1.22 The WFD assessment has been undertaken using the following general assumptions:

- The assessment has used WFD 2019 baseline classification data, which is the current officially reported baseline in the Cycle 3 River Basin Management Plan (RBMP).
- All assessments have been based on a precautionary approach where limited data or design certainty is identified, noting the points around future project above.
- Assessments have been undertaken to ascertain water availability constraints for options with new or increased abstractions. For example, Environment Flow Indicators (EFI) have been used to set 'Hands off Flows' (HoFs) for new abstractions. This effectively assumes that flow after the abstraction cannot go below the stated limit. Measurement of flows at downstream gauging stations will provide information to maintain and control abstractions in line with new licensed limits.
- Assessment assumes pipelines are underground (directionally drilled or pipe-jacked beneath any larger watercourses, roads or railways, and using pumped bypass and trenching under small roads and watercourses) and therefore will not cross watercourses above ground or cause direct impacts.
- The geographical extent of the WFD assessment has been generally limited to the water bodies where abstractions take place. There is potential for some effects continuing downstream of abstraction points, although it is assumed these would become increasingly limited and 'negligible' with distance. High level review is conducted on a case-by-case basis. Where downstream impacts are considered plausible, these water bodies have been included in the relevant assessments. This assumption will need to be reviewed as additional hydrological studies are undertaken.

2 Level 1 Water Framework Directive screening

2.1 Overview

2.1.1.1 WFD screening assessments have been undertaken for all of the WRMP24 options. These assessments identify any water bodies which could be affected by an option and screen out any option or part of an option which does not have the potential to lead to WFD compliance risks. If a compliance risk is identified, then the option or part of the option is carried forward for further assessment (Level 2). The WFD screening has identified that 28 supply-side options and four of the WINEP options have a very low risk of non-compliance under WFD and have been scoped out of further assessment.

2.2 Outcomes

2.2.1.1 A summary of the Level 1 assessment outcomes for the 50 WRMP24 Plan B supply-side options and five WINEP options are presented in Appendix A and the assessments are presented in Appendix B. These assessments shows that the 28 supply-side options and four of the WINEP options passed the WFD Level 1 screening for all water bodies (i.e., there is no risk of WFD deterioration or impediment to reaching future objectives) and have been scoped out for further study. These options are set out in Table 2.1 below.

Table 2.1: WRMP24 options passing WFD Level 1 screening

Option ID	Description
CAM4	Ruthamford South to Cambridge Water potable transfer (50Ml/d)
LNC25	Lincolnshire East to Lincolnshire Central potable transfer (29Ml/d)
EXC3	Essex South to Essex Central Potable Water Transfer (10Ml/d)
EXC7	Backwash water recovery, Essex Central WTW (0.3Ml/d)
FND26	Backwash water recovery, Fenland WTW (0.2Ml/d)
NAY1	Norwich and the Broads to Aylsham potable transfer (3Ml/d)
NBR6	Fenland to Norfolk Bradenham potable transfer (50Ml/d)
NEH3	Suffolk Thetford to Norfolk East Harling potable transfer (5Ml/d)
SUE23	Suffolk East WTW Upgrade (1.7Ml/d)
SUE24	Cambs and West Suffolk to East Suffolk potable transfer (5Ml/d)
SUT6	Backwash recovery at Barnham Cross (discharge reduction of 0.05Ml/d)
SWC8	Cambridge to Suffolk West Cambs Potable Water Transfer (50Ml/d)
EXS7	Backwash water recovery, Essex South WTW (0.3Ml/d)
NBR9	Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d)
NNC5	North Norfolk Coast WTW backwash water recovery (0.18Ml/d)
LNE3	Backwash water recovery, Lincolnshire East WTW (1.3Ml/d)
NAY4	Backwash water recovery, Norfolk Aylsham WTW (0.75Ml/d)
NED3	Backwash water recovery, Norfolk East Dereham WTW (0.1Ml/d)
NAY5	Backwash water recovery, Norfolk Aylsham WTW (0.1Ml/d)
SUT5	Norfolk Bradenham to Suffolk Thetford (15Ml/d)
SUE25	Backwash water recovery, Suffolk East WTW (0.17Ml/d)
LNN1	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3.5Ml/d)

Option ID	Description
LNB1	Ruthamford North to Bourne potable transfer (20Ml/d)
LNC16	Ruthamford North to Lincolnshire Central potable transfer (20Mld/)
LNC28	Bulk trade agreement – River Trent (7Ml/d)
NWY1	Norwich and the Broads to Norfolk Wymondham potable transfer (5Ml/d)
RTS24	Ruthamford North to Ruthamford South potable transfer (75Ml/d)
RTC3	Ruthamford South to Ruthamford Central potable transfer (20Ml/d)
WINEP Options	
Brett	River Support Scheme with 2Ml/d at Lavenham, 2Ml/d at either Semer or Raydon and 2Ml/d at Shelley.
Colne	River support from Great Yeldham (at current daily licenced quantity) plus River Restoration.
Gipping	An optimised combination of river restoration options #11, #12, and #13 (Reach #2 (Brantham Road (B1113), south of Great Blackenham, to the railway crossing west of Ipswich) and reach #3 (from the railway crossing west of Ipswich to the tidal limit).
Stiffkey	Houghton St Giles river support to Q90 RA flows at Warham All Saints (18Ml/d).

2.2.1.2 The remaining 22 supply-side options and one of the WINEP options were found to have the potential to pose a risk to WFD compliance to at least one water body. These options are set out in Table 2.2. These options have been assessed in detail using the Level 2 methodology (outcomes reported in Chapter 3).

Table 2.2: WRMP24 options which require detailed Level 2 assessment

Option ID	Description	Water bodies requiring further assessment	Origin of assessments completed if required
FND22	Marham abstraction (7.9Ml/d up to 2039, 3Ml/d after 2039)	GB105033047792: Nar downstream of Abbey Farm	-
LNC30	Lincolnshire Central WTW Upgrade (3.2Ml/d)	GB104028058480: Trent from Carlton-on-Trent to Laughton Drain	-
LNE11	Lincolnshire East Groundwater (7.5Ml/d)	GB40401G401500: North Lincolnshire Chalk Unit	-
LNE12	Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039)	GB104029061990: Louth Canal GB30432209: Covenham Reservoir	-
LNN3	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d)	GB40402G990300: Lower Trent Erewash – Secondary Combined	-
NHL4	Norfolk East Harling to Norfolk Harleston potable transfer (5Ml/d)	GB40501G400300: Broadland Rivers Chalk and Crag	-
NTB10	Norfolk Bradenham to Norwich and the Broads potable transfer (20Ml/d)	GB40501G400300: Broadland Rivers Chalk & Crag	-
RTS16	Ruthamford South Drought permit (2.07Ml/d)	GB105033047921: Ouse (Roxton to Earith) GB205033000060 Old Bedford River / River Delph (inc The Hundred Foot Washes)	Drought permit option. Increased abstraction from river during drought periods
RTS21	Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040)	GB105033047923: Ouse (Newport Pagnell to Roxton)	-
SWC13	Suffolk West & Cambs groundwater relocation (2.6Ml/d)	GB40501G400700: North Essex Chalk	-
NNC6	North Norfolk Coast WTW backwash water recovery (0.2Ml/d)	GB40501G400100: North Norfolk Chalk	-

Option ID	Description	Water bodies requiring further assessment	Origin of assessments completed if required
NHL7	Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d)	GB105034045850: Dickleburgh Stream	-
EXS19	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4Ml/d up to 2039, 13.9Ml/d after 2039)	GB520503713800: Colne; GB40503G000400: Essex Gravels	-
NED2	Norfolk Bradenham to Norfolk East Dereham potable transfer (10Ml/d)	GB40501G400300: Broadland Rivers Chalk & Crag	-
NNC4	Norfolk East Dereham to North Norfolk Coast potable transfer (10Ml/d)	GB40501G400300: Broadland Rivers Chalk & Crag	-
SHB9	South Humber Bank Non-potable desalination (60Ml/d)	GB640402492000: Lincolnshire; GB40501G401600: South Lincolnshire Chalk Unit	-
FND29	Fens Reservoir 50MCM (usable volume) (44.4Ml/d)	GB530503300300: Great Ouse GB205033000050: Middle Level GB205033000010: Counter Drain (Sutton and Mepal Internal Drainage Board [IDB] incl. Cranbrook Drain); GB205033000060: Old Bedford River / River Delph (including The Hundred Foot Washes) GB105032050381: Nene – Islip to tidal;	Assessed under SRO RAPID gate process as the full SRO with 50 MCM (usable volume) and all raw water abstractions with a total benefit of 88.8Ml/d, 44.4Ml/d of which is quoted for the WRMP24.
EXS10	Holland on Sea desalination (seawater) 26Ml/d	GB650503520001: Essex; GB40503G000400: Essex Gravels	-
LNE6	Mablethorpe desalination Seawater (50Ml/d)	GB640402492000: Lincolnshire; GB40501G401600: South Lincolnshire Chalk Unit	-
NTB17	Bacton desalination (seawater) (25Ml/d)	GB650503520003: Norfolk East	-
RTN30	Ruthamford North to Ruthamford North potable transfer (75Ml/d)	GB40502G402400: Nene Mid Lower Jurassic Unit GB40501G445500: Northampton Sands	-
RTN17	Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)	GB105030056520: South Beck GB105030056515: Swaton Drains GB104028053110: Trent from Soar to The Beck GB105030056780: Witham – conf (shortening of confluence) Cringle Bk to conf Brant GB105030062370: Witham – conf Brant to conf Catchwater Drain GB205030062425: Witham – conf Catchwater Drain to conf Bain GB205030062426: Lower Witham – conf Bain to Grand Sluice	Assessed under SRO RAPID gate process
Pant	WINEP Pant	GB40502G400900: North Essex Lower London Tertiaries; GB40501G400700: North Essex Chalk	WINEP mitigation option

3 Level 2 Water Framework Directive assessments

3.1 Overview and summary

3.1.1.1 The WFD Level 1 screening assessments identified 22 supply-side options and one WINEP option which required further assessment. These options have been assessed using a combination of the ACWG WFD Level 2 assessment (see methodology set out in Section 0) and applied professional judgment to interpret the outputs at a strategic plan level.

3.1.1.2 A summary of the outcomes of the WFD Level 2 assessment is provided in this chapter. These assessments are based on professional judgement and are scored using the scoring criteria set out in Table 1.4. The full Level 2 assessments are available upon request as part of Appendix C.

3.1.1.3 Of the 23 options, the detailed assessments have showed that six options pose a very low risk to WFD. Therefore, these options are considered to be compliant with the WFD, and do not merit further assessment at this point. On a precautionary basis, some risks to WFD compliance were identified for 17 options. It is anticipated that following further investigations, WFD compliance risks will be removed or suitable mitigation identified.

3.2 Cumulative effects of WRMP Plan B

3.2.1.1 Across Plan B, 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 (SRO) and Fens Reservoir (SRO) 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.

3.3 Marham abstraction (7.9Ml/d up to 2039, 12.3Ml/d after 2039) (FND22)

3.3.1.1 For this option, one water body was identified as requiring further assessment: GB105033047792: Nar downstream of Abbey Farm river water body.

3.3.1.2 The Level 2 WFD assessment identified precautionary deterioration risks (impact score 2) to river flow with corresponding potential impacts on biology and water quality, prior to consideration of any mitigation measures. This is due to a new abstraction from the river in the lower part of the catchment. The new abstraction will replace an upstream abstraction (current Marham abstraction) which is due to be closed following policy decisions on licence capping. While the closure of the upstream abstraction will help to increase river flow, the new surface water abstraction could result in changes in flow and water quality downstream of the new abstraction location. Further investigations will confirm the potential risks to WFD compliance, or risk of reducing benefits from the upstream closure. The assessment also highlights a potential impediment to achieving future objectives for hydrological regime element due to changes in flow downstream of the abstraction.

3.3.1.3 A summary of the Level 2 WFD assessment is included in Table 3.1 and detailed outputs are presented in Appendix C.

3.3.1.4 Further investigations are required to confirm this assessment including:

- Review of baseline ecological data, including results of any surveys undertaken for this scheme to better understand baseline conditions
- Additional hydroecological assessment of implications on flow, water quality and biology in the Nar River, and downstream Great Ouse (and associated designated sites) as a result of new abstraction
- Further details on the option, including details on scheme operation

3.3.1.5 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.1: Marham abstraction (7.9Ml/d up to 2039, 12.3Ml/d after 2039) (FND22) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Potential mitigation measures	Post mitigation impact score	Further comments
GB105033047792	Nar downstream of Abbey Farm	Low / Low	2	Possible	Possible	No	Review of baseline ecological data, including results of any surveys already undertaken for this scheme. Additional hydroecological assessment of implications on flow, water quality and biology of River Nar, and downstream Great Ouse (and associated designated sites) as a result of new abstraction. Further information about option, including details on proposed scheme operation.	Fish and eel screening at intake from new River Nar intake. Abstraction conditions to be set in order to minimise changes to hydrological regime.	1	Explore river restoration measures to address flow concerns in stream and ensure health of River Nar (and associated SSSI) is maintained post anticipated reduced flow if necessary. Could be an option to consider particularly as PR24 methodology encourages further implementation of Nature Based solutions like river restoration.

3.4 Lincolnshire Central WTW Upgrade (3.2Ml/d) (LNC30)

3.4.1.1 For this option one water body was identified as requiring further assessment: GB104028058480 Trent from Carlton-on-Trent to Laughton Drain River water body. The Level 2 WFD assessment identified minor effects (impact score 1) to flow in the river, with potential for consequential minor impacts on biology and water chemistry. This is due to the increase in abstraction from an existing surface water abstraction location. The assessment did not indicate any risk to future achievement of water body objectives.

3.4.1.2 A summary of the Level 2 WFD assessment is included in Table 3.2 and detailed outputs are presented in Appendix C.

3.4.1.3 Further investigations are required to confirm this assessment including:

- Hydroecology investigation into the impact of increased abstraction. This could include scenario modelling to understand likely changes in river velocity and level.
- Further details on design and construction methodology, particularly with regards to if any changes to existing intake and pumping station (PS) is required.

3.4.1.4 Mitigation is proposed in Table 3.2 which concludes that the WFD compliance risk remains minor localised (impact score 1).

Table 3.2: Lincolnshire Central WTW Upgrade (3.2Ml/d) (LNC30) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Potential mitigation measures	Post mitigation impact score
GB104028058480	Trent from Carlton-on-Trent to Laughton Drain	Low / Low	1	No	No	No	Further investigation into the impact of increased abstraction (including new total abstraction) on biological quality elements especially. This could include scenario modelling to understand likely changes in velocity and level. Further details on design and construction methodology, particularly with regards to if any changes to existing intake and PS is required.	If deemed appropriate after further investigation, use licence capping through use of Hands off Flow (HOF) restrictions and implement compensation/ augmentation flow.	1

3.5 Lincolnshire East Groundwater (7.5Ml/d) (LNE11)

3.5.1.1 For this option one water body was identified as requiring further assessment: GB40401G401500: North Lincolnshire Chalk Unit groundwater body.

3.5.1.2 The Level 2 WFD assessment (Table 3.3) identified precautionary deterioration risks (impact score 2) to the water balance and dependent surface water body tests (specifically North Beck Drain) prior to consideration of mitigation measures. This is due to the increase in groundwater abstraction from various groundwater sources. The assessment also highlighted a potential for this option to impede the water body from achieving future objectives as increase in abstraction could further reduce natural flows, limiting improvements which can be made.

3.5.1.3 A summary of the Level 2 WFD assessment is included in Table 3.3 and detailed outputs are presented in Appendix C.

3.5.1.4 Further investigations are required to confirm this assessment and these assessments could include:

- Further investigation into the impact of increased abstraction on water balance. This could include scenario modelling.
- Hydrological assessment of the impact of abstraction on groundwater levels and therefore flows in supported watercourses.
- Further details on option and proposed construction and operation.

3.5.1.5 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.3: Lincolnshire East Groundwater (7.5Ml/d) (LNE11) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Potential mitigation measures	Post mitigation impact score
GB40401 G401500	North Lincolnshire Chalk Unit	Low / Low	2	Possible	Possible	No	Assessment of the impacts of abstraction on flow in the watercourses and groundwater levels. Further information about operation of the option.	Augmentation of North Beck Drain to help to maintain flow. Monitoring and modelling scenarios to be undertaken prior to implementation of option to establish exact impact on the groundwater body, and its quality elements.	1

3.6 Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039) (LNE12)

3.6.1.1 For this option two water bodies were identified as requiring further assessment: GB30432209: Covenham Reservoir water body and GB104029061990: Louth Canal water body.

3.6.1.2 The Level 2 WFD assessment for the Covenham Reservoir water body identified minor effects (impact score 1) to biology due to the potential increased abstraction leading to greater water level fluctuations within the reservoir. The assessment did not indicate any risk to achieving water body objectives. Proposed mitigation is set out in Table 3.4 which would help to minimise the impact of this option on the reservoir water body. Post mitigation the impact remains as minor (impact score 1). Therefore, for this water body the assessment has not identified any risk to WFD compliance.

3.6.1.3 The Level 2 WFD assessment for the Louth Canal water body identified a precautionary deterioration risk (impact score 2) to flow (hydrological regime) with associated potential impacts on biology and water chemistry (physico-chemical quality elements), prior to consideration of any mitigation measures. This is due to a potential increase in abstraction from the canal during high demand conditions. The increase in abstraction could lead to reductions in flow velocity and volume and an increase in sedimentation, which could adversely impact biology, and a reduction in dilution potential downstream which could adversely impact water quality.

3.6.1.4 In addition, the assessment prior to mitigation highlighted the potential to impede the Louth Canal water body from achieving future WFD objectives for biological elements. The reasons for not achieving good stated in the RBMP data relate to invasive non-native species and water quality (due to water industry discharges). The reduction in flow could lead to more preferential conditions for invasive non-native species, and a reduction in dilution potential for any discharges downstream of the abstraction.

3.6.1.5 A summary of the Level 2 WFD assessment is included in Table 3.4 and detailed outputs are presented in Appendix C.

3.6.1.6 Further studies are required to confirm this assessment including:

- Hydroecological study on impact of abstraction on flow, biology and water quality (due to reduction in dilution) in the Louth Canal.
- Assessment of the seasonal abstraction profile and implications on flow in Louth Canal.
- Hydroecological assessment of impact of changes in water level on reservoir habitat (focussing on phytoplankton) in Covenham Reservoir.

3.6.1.7 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.4: Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039) (LNE12) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Potential mitigation measures	Post mitigation impact score	Further comments
GB104029061990	Louth Canal	Low / Low	2	Possible	Possible	No	Hydroecological study on impact of abstraction on flow, biology and water quality (due to reduction in dilution). Assessment of the seasonal abstraction profile and implications on flow.	Minimise abstraction during low flow periods and consider use of Hands Off Flow (HOF).	1	Assumes no new pipelines required to transfer water from watercourses to reservoir. Some of the mitigation identified in the RBMP (fish screens on intake from Louth Canal, habitat creation along Louth canal near intake) could be included in this scheme to help improve the water body.
GB30432209	Covenham Reservoir	Low / Low	1	No	No	No	Hydroecological assessment of impact of changes in water level on reservoir habitat (focussing on phytoplankton).		1	Allow for the addition of some of the PoM to help improve the water body.

3.7 Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d) (LNN3)

3.7.1.1 For this option one water body was identified as requiring further assessment: GB40402G990300: Lower Trent Erewash – Secondary Combined groundwater body.

3.7.1.2 The Level 2 WFD assessment (Table 3.5) identified a precautionary deterioration risk (impact score 2) to a dependent surface water body (River Trent) and the water balance WFD tests, prior to consideration of mitigation measures. This is due to proposed increase in groundwater abstraction which is within the existing licence but above recent actual (RA) volumes. This could lead to reduced groundwater levels near the River Trent, and an adverse effect on the groundwater body water balance.

3.7.1.3 A summary of the Level 2 WFD assessment is included in Table 3.5 and detailed outputs are presented in Appendix C.

3.7.1.4 Further studies are required to better understand the risks to water body status and these assessments could include:

- Further investigation into the impact of increased abstraction on water balance. This could include scenario modelling.
- Hydrological assessment of the impact of abstraction on groundwater levels and therefore flows in supported watercourses.
- Further details on option and proposed construction and operation.

3.7.1.5 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.5: Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d) (LNN3) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40402 G990300	Lower Trent Erewash – Secondary Combined	Low / Low	2	Possible	Possible	No	Assessment of scale of water balance impacts. Hydrological assessment of the impacts of abstraction on flow in the watercourses and groundwater levels. Further information about option. Monitoring and modelling scenarios to be undertaken prior to implementation of option to establish exact impact on groundwater body, and its quality elements.	Abstraction conditions to be set in order to minimise changes to hydrological regime following additional studies; noting the relatively small volume involved in this option.	1

3.8 Norfolk East Harling to Norfolk Harleston potable transfer (5Ml/d) (NHL4)

3.8.1.1 For this option one water body was identified as requiring further assessment: GB40501G400300: Broadland Rivers Chalk & Crag groundwater body.

3.8.1.2 The Level 2 WFD assessment identified minor effects (impact score 1) to dependent surface water bodies, GWDTEs, water balance and chemical status elements, prior to consideration of mitigation measures. This is due to the potential requirement for construction dewatering, which could lead to temporary reductions in groundwater levels. This could impact on flow in surface water bodies and GWDTEs and potentially lead to mobilisation of any existing below ground contamination.

3.8.1.3 A summary of the Level 2 WFD assessment is included in Table 3.6 and detailed outputs are presented in Appendix C.

3.8.1.4 Further investigations are required to confirm this assessment and these investigations could include:

- Groundwater monitoring to understand groundwater levels and how they interact with the option to ensure appropriate mitigation is included
- Investigation into impact on groundwater levels of construction dewatering and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction on the GWDTE (Shelfanger Meadows SSSI), if required
- Further information about construction and operation of the option

3.8.1.5 Mitigation is proposed in Table 3.6 which concludes that the WFD compliance risk remains minor localised (impact score 1).

Table 3.6: Norfolk East Harling to Norfolk Harleston potable transfer (5Ml/d) (NHL4) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40501 G400300	Broadland Rivers Chalk & Crag	Low / Low	1	No	No	No	Groundwater monitoring to understand groundwater levels and how they might interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of Clay bunds within pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved further away from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	1

3.9 Norfolk Bradenham to Norwich and the Broads potable transfer (20Ml/d) (NTB10)

3.9.1.1 For this option one groundwater body was identified as requiring further assessment: GB40501G400300: Broadland Rivers Chalk & Crag.

3.9.1.2 The Level 2 WFD assessment (Table 3.7) identified a precautionary deterioration risk (impact score 2) to GWDTEs (River Wensum SSSI and Crostwick Marsh SSSI) prior to consideration of mitigation measures. This is due to potential requirements for dewatering during construction, which could lead to a temporary reduction in groundwater levels. There could also be a direct loss of habitat within the River Wensum SSSI site.

3.9.1.3 In addition, the assessment highlights a potential for this option to impede the water body from achieving future objectives for GWDTEs. The quantitative GWDTE test is already at poor status due to the influence of agriculture and rural land management on natural flow and levels of water. This option includes river crossings within SSSIs which could lead to changes in groundwater levels during construction, temporarily exacerbating issues of changes to natural flow.

3.9.1.4 A summary of the Level 2 WFD assessment is included in Table 3.7 and detailed outputs are presented in Appendix C.

3.9.1.5 Further studies are required to better understand the risks to water body status and these investigations could include:

- Additional groundwater monitoring to understand groundwater levels and how they interact with the option to ensure appropriate mitigation is included.
- Further investigation into impact on groundwater levels of construction dewatering and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction on the SSSI, if required.
- Further information about construction and operation of the option.

3.9.1.6 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.7: Norfolk Bradenham to Norwich and the Broads potable transfer (20Ml/d) (NTB10) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact
GB40501 G400300	Broadland Rivers Chalk & Crag	Low / Low	2	No	Possible	No	Groundwater monitoring to understand groundwater levels and how they may interact with the scheme. Investigation into impact on groundwater levels of dewatering for construction and consideration of mitigation (such as returning water to the ground through recharge trenches to help minimise the impact of construction), if required. Further information about option.	Use of clay bunds in pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved outside of the SSSI sites/further away from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	1

3.10 Ruthamford South Drought permit (2.07Ml/d) (RTS16) – Drought plan option

3.10.1.1 This is a drought plan option and the WFD assessment was conducted as part of the Anglian Water Drought Plan[2].This option considers a drought permit for the existing abstraction at Offord.

3.10.1.2 The drought permit would be used to refill Grafham Water in the winter following a preceding dry period. The assessment undertaken in the drought plan for this option considered two WFD water bodies; GB105033047921: Ouse (Roxton to Earith) and GB205033000060 Old Bedford River/River Delph (including The Hundred Foot Washes). The assessment identifies hydrological, ecological and water quality impacts from the proposed drought permit.

3.10.1.3 Under winter conditions the assessment identified potential 'moderate' impacts on fish in the GB105033047921: Ouse (Roxton to Earith) water body, with 'minor' impacts on other biological status elements and for all biological elements in the GB205033000060 Old Bedford River/ River Delph (including The Hundred Foot Washes) water body.

3.10.1.4 The assessment outcomes showed that during use of the permit, predicted reductions in flow could affect fish populations. The drought plan sets out a proposed approach to monitoring, along with recommended mitigation where impacts are predicted to be greater than 'low-moderate'.

3.10.1.5 Full details of the assessment completed for the drought permit can be found in the Anglian Water Drought plan[2].

3.10.1.6 The temporary nature of the drought plan activity and conditions set on its use mean the effects would not be persistent and would not lead to a change in water body status or permanently compromise future objectives.

3.11 Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040) (RTS21)

3.11.1.1 For this option one water body was identified as requiring further assessment: GB105033047923: Ouse (Newport Pagnell to Roxton) river water body.

3.11.1.2 The Level 2 WFD assessment (Table 3.8) identified a precautionary deterioration risk (impact score 2) to river flow (hydrological regime) and associated potential impacts on biology (fish and invertebrates), prior to consideration of any mitigation measures. This is due to potential for changes in flow velocity, flow volume and sedimentation as a result of increased surface water abstraction.

3.11.1.3 The assessment also highlights a potential impediment to achieving future objectives for phosphate. This is a result of the reduction in flow leading to reduced in-river dilution of phosphate downstream of the abstraction point.

3.11.1.4 A summary of the Level 2 WFD assessment is included in Table 3.8 and detailed outputs are presented in Appendix C.

3.11.1.5 Further investigations are required to confirm this assessment including:

- Review of baseline ecological data, potentially requiring additional monitoring to understand biology and how it could be affected by the option to ensure appropriate mitigation is included.
- Hydroecology investigation into the impact of abstraction in river flow ecology.
- Further information about construction and operation of the option.

3.11.1.6 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.8: Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040) (RTS21) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB105033047923	Ouse (Newport Pagnell to Roxton)	Low / Low	2	Possible	Possible	No	Review of baseline ecological data, potentially requiring additional monitoring to understand biology and how it could be affected by the option to ensure appropriate mitigation is included. Assessment of impact of increased abstraction on water quality and biology. Further information about how the option will be operated.	Adjustment of abstraction conditions to limit impact on hydrological regime.	1	Assumes upgrade in WTW capacity will require increase in abstraction rate (assumes within licence but above recent actual average (RAA) rates.
GB40501G400700	North Essex Chalk	Low / Low	2	Possible	Possible	No	Detailed hydrogeological assessment of the impacts of below ground structures on water balance and flows to surface water courses. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme.	In order to allow the new abstraction to take place, the old Wixoe borehole is planned to be closed so new abstraction can operate under existing licence. The option is reliant on this change.	1	GB40501G400700

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							Further information about option, including details on abstraction conditions.			

3.12 Suffolk West & Cambs groundwater relocation (2.6Ml/d) (SWC13)

3.12.1.1 In this option one water body was identified as requiring further assessment: GB40501G400700: North Essex Chalk groundwater body.

3.12.1.2 The Level 2 WFD assessment (Table 3.9) identified a precautionary deterioration risk (impact score 2) to dependent surface water body (River Stour) and water balance WFD status, prior to mitigation, due to the new groundwater abstraction. Both of these status elements are already at Poor status (the lowest class for groundwater bodies), and therefore any adverse change is a risk of deterioration under the WFD. The risk to WFD compliance is linked to the proposed introduction of a new (relocated) abstraction which could reduce groundwater levels, and therefore reduce natural flows in the River Stour.

3.12.1.3 In addition, the assessment highlights the potential for this option to impede the water body from achieving future objectives for the dependent surface water body and water balance elements. This is due to the new abstraction which could lead to further reduction in groundwater levels and could impede improvements which can be made.

3.12.1.4 In order for this option to be carried forwards an existing licenced borehole at Wixoe will be closed. This existing borehole has a significantly higher abstraction, and as such this option will not lead to an overall increase in abstraction.

3.12.1.5 A summary of the Level 2 WFD assessment is included in Table 3.9 and detailed outputs are presented in Appendix C.

3.12.1.6 Further studies are required to better understand the risks to water body status and these assessments could include:

- Hydrogeological assessment of the impacts of below ground structures on water balance and flows to surface watercourse.
- Review of all available ecological data, including results of any surveys already undertaken for this scheme, potentially leading to a requirement for additional monitoring to understand biology and how it could be affected by the option. This will ensure appropriate mitigation is included where possible.
- Further information about construction and operation of the option.

3.12.1.7 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.9: Suffolk West & Cambs groundwater relocation (2.6Ml/d) (SWC13) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40501 G400700	North Essex Chalk	Low / Low	2	Possible	Possible	No	Detailed hydrogeological assessment of the impacts of below ground structures on water balance and flows to surface water courses. Detailed review of all baseline ecological WFD data, including results of any surveys already undertaken for this scheme. Further information about option, including details on abstraction conditions.	In order to allow the new abstraction to take place, the old Wixoe borehole is planned to be closed so new abstraction can operate under existing licence. The option is reliant on this change.	1

3.13 North Norfolk Coast WTW backwash water recovery (0.2Ml/d) (NNC6)

3.13.1.1 For this option one groundwater body was identified as requiring further assessment: GB40501G400100: North Norfolk Chalk.

3.13.1.2 The Level 2 WFD assessment identified minor effects (impact score 1) to quantitative status elements and chemical status elements, prior to consideration of mitigation measures. This is due to construction dewatering which could lead to short-term temporary reductions in groundwater levels and therefore flow in surface watercourses, and mobilisation of existing contaminated groundwater.

3.13.1.3 Further investigations are required to confirm this assessment including:

- Additional groundwater monitoring to understand groundwater levels and how they interact with the option to ensure appropriate mitigation is included.
- Further investigation into impact on groundwater levels of construction dewatering and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction on the Sheringham and Beeston Regis Common SSSI, if required.
- Further information about construction and operation of the option.

3.13.1.4 A summary of the Level 2 WFD assessment is included in Table 3.10 and detailed outputs are presented in Appendix C.

3.13.1.5 Mitigation is proposed to reduce potential construction stage impacts although this does not affect the WFD compliance risk which remains minor localised (and in this case temporary during construction) (impact score 1).

Table 3.10: North Norfolk Coast WTW backwash water recovery (0.2Ml/d) (NNC6) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40501 G400100	North Norfolk Chalk	Low / Low	1	No	No	No	Groundwater monitoring to understand groundwater levels and how they interact with the scheme. Investigation into impact on groundwater levels of construction dewatering. Further information about option.	Consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required.	1

3.14 Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d) (NHL7)

3.14.1.1 For this option, one water body was identified as requiring further assessment: GB105034045850: Dickleburgh Stream river water body.

3.14.1.2 The Level 2 WFD assessment (Table 3.11) identified a precautionary deterioration risk (impact score 2) to flow in the watercourse, with associated potential impacts on biology, morphology and water chemistry prior to mitigation. This is due to a reduction in the volume of the existing waste water discharge to a local watercourse. Although a small volume, the reduction in flow could be significant as the WTW discharges into the headwaters so could comprise a substantial percentage of the flow. This could cause a loss of flow velocity and volume, which could reduce dilution and increase risk of sediment deposition, creating less preferential conditions for biology.

3.14.1.3 In addition, the assessment highlights a potential for this option to impede the water body from achieving future objectives for invertebrates, phosphate, macrophytes and phytobenthos. This is due to changes in flow conditions which could exacerbate water quality issues downstream, reducing the effectiveness of any future improvements which can be made.

3.14.1.4 A summary of the Level 2 WFD assessment is included in Table 3.11 and detailed outputs are presented in Appendix C.

3.14.1.5 Further studies are required to better understand the risks to water body status and these assessments could include:

- Review of baseline ecological data, potentially leading to a requirement for additional monitoring to understand biology baseline and how it could be affected by the option. This will allow appropriate mitigation to be included where possible.
- Hydroecology assessment of the impacts of discharge reduction on flow, hydromorphology, biology and water quality, which could include scenario modelling.
- Further information about construction and operation of the option.

3.14.1.6 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

Table 3.11: Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d) (NHL7) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact
GB105034045850	Dickleburgh Stream	Low / Low	2	Possible	Possible	No	Review of all baseline ecological WFD data, including results of any surveys and sampling already undertaken for this option. Hydroecology assessment of the impacts of discharge reduction on flow, hydromorphology and water quality. Further information about operational conditions of option.	Abstraction conditions to be set in order to minimise changes to hydrological regime following additional studies; noting the relatively small volume involved in this option.	1

3.15 Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4Ml/d up to 2039, 13.9Ml/d after 2039) (EXS19)

3.15.1.1 For this option two water bodies were identified as requiring further assessment: GB520503713800: Colne transitional water body and GB40503G000400: Essex Gravels groundwater body.

3.15.1.2 The Level 2 WFD assessment for the Colne transitional water body identified a precautionary deterioration risk (impact score 2) to flow (hydrological regime), prior to consideration of mitigation. This is due to a reduction in waste water discharge from the WTW to this water body, which could lead to changes to flow velocity which could in turn lead to impacts on hydromorphology and sedimentation in the estuary.

3.15.1.3 The assessment also highlights a potential impediment to achieving future objectives for dissolved inorganic nitrogen and hydrological regime. This is due to the potential for changes in water quality due to a new process water discharge from the new treatment plant, which could reduce the effectiveness of future measures to improve water body status. In addition, flow changes may not help to support measures to improve the hydrological regime to support good as part of its future objectives. However, it is not anticipated that these changes alone would be sufficient to impede the water body meeting future objectives given the water body scale and tidal influence.

3.15.1.4 Further investigations are required to confirm this assessment including:

- Review of baseline ecological data, potentially requiring additional monitoring to understand biology and how it could be affected by the option to ensure appropriate mitigation is included.
- Hydroecology assessment of the impacts of changes in flow due to reduction in discharge, and changes in water quality from the new process water discharge.
- Further information about construction and operation of the option.

3.15.1.5 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.15.1.6 The Level 2 WFD assessment for the Essex Gravels groundwater body identified minor effects (impact score 1) on this groundwater body but these would not be sufficient to lead to deterioration. Therefore, the option impacts on this water body are assessed to be WFD compliant. Further investigations are recommended to confirm the outcomes of this assessment:

- Additional groundwater monitoring to understand groundwater levels and how they interact with the option to ensure appropriate mitigation is included
- Further investigation into impact on groundwater levels of construction dewatering and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction on the GWDTE (Upper Colne Marshes SSSI), if required
- Further information about construction and operation of the option

3.15.1.7 A summary of the Level 2 WFD assessment is included in Table 3.12 and detailed outputs are presented in Appendix C.

Table 3.12: Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4Ml/d up to 2039, 13.9Ml/d after 2039) (EXS19) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB520503713800	Colne	Low / Low	2	Possible	Possible	No	Review of all baseline ecological data, including results of any surveys and sampling already undertaken for this option. Hydroecological assessment of impact to watercourse from reduction in flow, and changes in water quality from new process water discharge. Further information about option.	Implement compensation/ augmentation flow. Identify measures to dilute RO concentrate before discharged into Colne.	1
GB40503G000400	Essex Gravels	Low / Low	1	No	No	No	Groundwater monitoring to understand groundwater levels and how they interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of Clay bunds where groundwater potentially encountered. If possible, shafts for river crossings should be moved outside of the SSSI sites/further away from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	1

3.16 Norfolk Bradenham to Norfolk East Dereham potable transfer (10Ml/d) (NED2)

3.16.1.1 For this option one water body was identified as requiring further assessment: GB40501G400300: Broadland Rivers Chalk & Crag groundwater body. The Level 2 WFD assessment identified a precautionary deterioration risk (impact score 2) to the GWDTE status test, when considered prior to mitigation. This is due to potential reduction in groundwater flow at Dereham Rush Meadow SSSI GWDTE relating to construction dewatering. Given the current poor status of this element, (the lowest class for groundwater bodies), any potential adverse change could lead to a WFD deterioration.

3.16.1.2 The proposed mitigation in Table 3.13 reduces the impact to minor, localised and temporary effects (impact score 1) and therefore if implemented, there is no risk of deterioration of the water body status. Further investigations are required to confirm this assessment including:

- Additional groundwater monitoring to understand groundwater levels and how they interact with the option to ensure appropriate mitigation is included.
- Further investigation into impact on groundwater levels of construction dewatering and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction on the SSSI, if required.
- Further information about construction and operation of the option.

3.16.1.3 A summary of the Level 2 WFD assessment is included in Table 3.13 and detailed outputs are presented in Appendix C.

Table 3.13: Norfolk Bradenham to Norfolk East Dereham potable transfer (10Ml/d) (NED2) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40501G 400300	Broadland Rivers Chalk & Crag	Low / Low	2	Possible	Possible	No	Groundwater monitoring to understand groundwater levels and how they interact with the option. Investigation into impact on groundwater levels of dewatering for construction. Further information about option.	Use of clay bunds in pipeline trench to minimise groundwater flow along the trench. Return water to the ground (through recharge trenches) to help minimise the impact of construction dewatering. Shafts for river crossings should be moved as far as possible from the SSSI sites and sealed to ensure minimal groundwater egress after construction.	1

3.17 Norfolk East Dereham to North Norfolk Coast potable transfer (10Ml/d) (NNC4)

3.17.1.1 For this option one water body was identified as requiring further assessment: Broadland Rivers Chalk & Crag groundwater body (GB40501G400300). The Level 2 WFD assessment identified a precautionary deterioration risk (impact score 2) to the GWDTE status test, when considered prior to mitigation. This is due to potential reduction in groundwater flow to the River Wensum SSSI GWDTE from construction dewatering. Given the current poor status of this element, (the lowest class for groundwater bodies), any potential adverse change could lead to a WFD deterioration.

3.17.1.2 The proposed mitigation in Table 3.14 reduces the impact to minor, localised and temporary effects (impact score 1) and therefore if implemented, there is no risk of deterioration of the water body status. Further investigations are required to confirm this assessment including:

- Additional groundwater monitoring to understand groundwater levels and how they interact with the option to ensure appropriate mitigation is included.
- Further investigation into impact on groundwater levels of construction dewatering and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction on the SSSI, if required.
- Further information about construction and operation of the option.

3.17.1.3 A summary of the Level 2 WFD assessment is included in Table 3.14 and detailed outputs are presented in Appendix C.

Table 3.14: Norfolk East Dereham to North Norfolk Coast potable transfer (10Ml/d) (NNC4) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40501G400300	Broadland Rivers Chalk & Crag	Low / Low	2	Possible	Possible	No	Groundwater monitoring to understand groundwater levels and how they interact with the option. Investigation into impact on groundwater levels of dewatering for construction. Further information about option.	Use of clay bunds in pipeline trench to minimise groundwater flow along the trench. Return water to the ground (through recharge trenches) to help minimise the impact of construction dewatering. Shafts for river crossings should be moved as far as possible from the SSSI sites and sealed to ensure minimal groundwater egress after construction.	1

3.18 South Humber Bank Non-potable desalination (60Ml/d) (SHB9)

3.18.1.1 Two water bodies were identified as requiring further assessment: GB640402492000: Lincolnshire coastal water body and GB40501G401600: South Lincolnshire Chalk Unit groundwater body.

3.18.1.2 The Level 2 WFD assessment in Table 3.15 for the Lincolnshire coastal water body identified a precautionary deterioration risk (impact score 2) to biology, mitigation measures assessment and water chemistry (dissolved inorganic nitrogen and dissolved oxygen) prior to mitigation. This is due to the:

- Discharge of the saline desalination waste stream which could adversely impact biology and local marine protected areas under WFD.
- New intake and discharge outfall structures, which could potentially increase the physical modification pressures of this water body.
- Changes in flow velocity and flow volume around the structures which could produce negative impacts on biology and sedimentation patterns.

3.18.1.3 The HRA considers the implications of the works on the marine protected areas and has concluded that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan. Further details can be found in Sub-report A Habitats Regulation Assessment of this WRMP24.

3.18.1.4 The assessment also highlights a potential impediment to achieving future objectives for mitigation measures. This is due to the introduction of additional modifications into the water body, which could reduce the improvements which can be made in the future. This could impede the water body meeting future objectives and good status.

3.18.1.5 Further investigations are required to confirm this assessment including:

- Investigation into the impact of new intake and discharge on hydromorphology and physical modification pressures in this water body.
- Hydroecological study on impact of intakes and outfall on biology and water quality, particularly the impact of saline discharge, this could include hydrodynamic modelling.
- Further details on design and construction methodology, particularly for the intake and outfall pipelines.

3.18.1.6 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.18.1.7 The Level 2 WFD assessment for the South Lincolnshire Chalk Unit groundwater body identified a precautionary deterioration risk (impact score 2) to quantitative status elements and chemical status elements, prior to consideration of mitigation measures. This is due to construction dewatering which could impact on the groundwater levels beneath the Salfleetby-Theddlethorpe Dunes SSSI and could impact groundwater quality through changes to saline intrusion beneath the site. The assessment did not indicate any risk to achieving good status nor future achievement of water body objectives.

3.18.1.8 Further investigations are required to confirm this assessment including:

- Further details on design and construction methodology, particularly with regards to the construction of the intake and outfall pipelines.

- Hydrogeological investigation into the impact of temporary dewatering on saline intrusion, particularly focussing on the area beneath the SSSI.

3.18.1.9 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.18.1.10 A summary of the Level 2 WFD assessment is included in Table 3.15 and detailed outputs are presented in Appendix C.

Table 3.15: South Humber Bank Non-potable desalination (60Ml/d) (SHB9) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB640402492000	Lincolnshire (coastal)	Low / Low	2	Possible	Possible	No	Investigation into the impact of new intake and discharge on hydromorphology and physical modification pressures in this water body. Hydroecological study on impact of intakes and outfall on biology and water quality, particularly the impact of concentrated saline discharge. Further details on design and construction methodology, particularly construction of the intake and outfall pipelines.	Fish and eel screening at new intake. Design of desalination process and outfall structure in line with best practice to meet acceptable environmental requirements.	1	Consideration of potential implications of discharging concentrated saline water close to protected sites.– HRA concludes that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan.
GB40501G401600	South Lincolnshire Chalk Unit	Low / Low	2	Possible	No	No	Further details on design and construction methodology, particularly with regards to the construction of the intake and outfall pipelines. Hydrogeological investigation into the impact of temporary dewatering on saline intrusion, particularly focussing on the area beneath the SSSI.	Minimise requirement for dewatering in and around the SSSI.	1	-

3.19 Fens Reservoir 50MCM (usable volume) (44.4Ml/d) (FND29)

3.19.1.1 The WFD assessment for this option was undertaken as part of the wider Fens Reservoir SRO project, and the outcomes of the assessment have been reviewed in line with the strategic approach at plan level outlined in Section 1.7. This option has been selected within Plan B and all three alternative plans, so is essential for the deliverability of the WRMP24 (see Decision Making Report technical supporting document for detail).

3.19.1.2 A summary of the Level 2 findings is presented here. Ten water bodies (seven rivers and three transitional) were identified as requiring further assessment. The water bodies include a number of mainly artificial drainage catchments including a number of Internal Drainage Boards (IDBs):

- GB530503300300: Great Ouse (transitional)
- GB205033000050: Middle Level
- GB205033000060: Old Bedford River/River Delph (including The Hundred Foot Washes)
- GB105032050381: Nene – Islip to tidal
- GB205033000010: Counter Drain (Sutton and Mepal IDB including Cranbrook Drain)
- GB205033000020: Counter Drain (Manea and Welney IDB)
- GB205033000030: Counter Drain (Upwell and Outwell IDB)
- GB530503200200: Nene (transitional)
- GB105032050382: Mortons Leam
- GB530503311300: Wash Inner (transitional)

3.19.1.3 The Level 2 WFD assessment for the Great Ouse transitional water body identified a precautionary deterioration risk (impact score 2) to biological elements, when considered prior to mitigation. This is due to the new abstraction leading to a reduction in flow velocity and volume that could lead to changes in biology. The assessment also highlights a potential impediment to achieving future objectives for angiosperms. This is due to activities with this option that could lead to increased sedimentation potentially exacerbating observed pressures on biology.

3.19.1.4 The Level 2 WFD assessment for the Middle Level river water body identified a precautionary deterioration risk (impact score 2) to biological, hydromorphological and physio-chemical quality elements, prior to consideration of mitigation. This is due to changes in flow and hydromorphology from a new abstraction and potential changes in water quality and morphology due to the discharge of water from a catchment of differing water quality. The assessment also highlights a potential impediment to achieving future objectives for ammonia, hydrological regime, mitigation measures assessment and phosphate. This is due to the new abstraction leading to changes in flow and changes in water quality associated with the new discharge.

3.19.1.5 The Level 2 WFD assessment for the Old Bedford River/River Delph (including The Hundred Foot Washes) river water body identified a precautionary deterioration risk (impact score 2) to biology, hydrological regime and water quality (physio-chemical quality elements) prior to mitigation. This is due to changes in flow/hydromorphology and associated potential impacts on biology and water quality from the potential new abstraction. The assessment also highlights a potential risk to achieving future objectives for dissolved oxygen and mitigation

measures assessment. This is due to the new abstraction leading to changes in flow and therefore changes in water quality associated with the new abstraction.

3.19.1.6 The Level 2 WFD assessment for the Nene – Islip to tidal river water body identified a precautionary deterioration risk (impact score 2) to biological, and physio-chemical quality elements prior to mitigation. This is due to potential changes in flow and hydromorphology from the new abstraction, and potential changes in water quality and morphology due to the discharge of water from a catchment of differing water quality. The assessment also highlights a potential impediment to achieving future objectives for phosphate. This is due to activities that could lead to changes in water quality associated with the new discharge and loss of diluting flow due to the new abstraction.

3.19.1.7 Detailed further studies are underway at a project level to better understand the risks to water body status posed by the option on these water bodies, and refinement of design options. Preliminary mitigation requirements have been identified in this plan level assessment in Table 3.16, which would be confirmed and delivered following detailed project level investigations and assessments. The post-mitigation scoring at the plan level is based on the expectation that project level design development (including assessment of any project-level alternatives for different components) will be in line with WFD objectives, and subject to ongoing WFD compliance assessment review prior to and as part of application for consent.

3.19.1.8 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk for these four water bodies can be reduced to minor localised (impact score 1).

3.19.1.9 The Level 2 WFD assessment for the Counter Drain (Sutton and Mepal IDB including Cranbrook Drain) river water body identified minor effects (impact score 1) to biological, hydromorphological and physico-chemical quality elements before consideration of mitigation measures. This is due to changes in flow and hydromorphology from the likely works on the Forty Foot Drain.

3.19.1.10 The Level 2 WFD assessment for the Counter Drain (Manea and Welney IDB) river water body identified minor effects (impact score 1) to biological, hydromorphological and physico-chemical quality elements without consideration of mitigation measures. This is due to potential changes in flow and hydromorphology from the new upstream abstraction and changes in water quality and morphology from the discharge of water from a different catchment of differing water quality.

3.19.1.11 The Level 2 WFD assessment for the Counter Drain (Upwell and Outwell IDB) river water body identified minor effects (impact score 1) to biological, hydromorphological and physico-chemical quality elements without consideration of mitigation measures. This is due to potential changes in flow and hydromorphology from the new abstraction and changes in water quality and morphology from the discharge of water from a different catchment of differing water quality.

3.19.1.12 The Level 2 WFD assessment for the Nene transitional water body identified minor effects (impact score 1) to biological, and physico-chemical quality elements prior to consideration of mitigation measures. This is due to potential changes in flow and hydromorphology from the new abstraction and changes in water quality and morphology from the discharge of water from a catchment of differing water quality.

3.19.1.13 The Level 2 WFD assessment for the Mortons Leam river water body identified minor effects (impact score 1) to biological, hydromorphological and physico-chemical quality elements, prior to consideration of mitigation measures. This is due to potential changes in flow and hydromorphology from the new abstraction in the upstream water body and changes in water quality and morphology from the discharge of water from a catchment of differing water quality in the upstream water body.

3.19.1.14 Mitigation is proposed in Table 3.16 which concludes that the WFD compliance risk for these five water bodies would remain minor localised (impact score 1).

3.19.1.15 The HRA considers the implications of the works on the marine protected areas for the Wash Inner (transitional) water body and has concluded that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan. Further details can be found in Sub-report A Habitats Regulation Assessment of this WRMP24. The Level 2 WFD assessment for the downstream Wash Inner transitional water body identified no risk of deterioration (impact score 0). This impact scoring was identified after assessment of the implications of the new abstractions in upstream water bodies.

3.19.1.16 While the WFD assessment, prior to mitigation, identifies a number of precautionary compliance risks, it is considered at this plan level that mitigation and design adaptations will be capable of being sufficient to manage WFD compliance issues. This SRO project also offers significant multi benefit opportunities to improve the water environment and wider environment. These opportunities are being identified and investigated further as part of the SRO project and will be reported through the SRO RAPID gate process.

3.19.1.17 A summary of the Level 2 WFD assessment is included in Table 3.16 and detailed outputs are presented in Appendix C.

Table 3.16: Fens Reservoir 50MCM (usable volume) (44.4Ml/d) (FND29) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB530503300300	Great Ouse	Low / Low	2	Possible	Possible	No	1) Ongoing refinement of the design. 2) Hydraulic modelling to understand the impact on flow and velocity as a result of the abstraction and upstream discharge. 3) Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the abstraction and upstream discharge. This will help determine appropriate mitigation measures. 4) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	Implementation of best practice mitigation measures for the intake structure. Abstraction conditions to be set in line with Hands off Flows (HoF).	1	Assumes pipeline crossings are trenchless under large watercourses
GB205033000050	Middle Level	Low / Low	2	Possible	Possible	Possible	1) Ongoing refinement of the design. 2) Land drainage and site drainage design to understand which watercourses will be diverted/realigned and which are lost. 3) Hydrology study to understand potential reduction in catchment area (and impacts on flow). 4) Hydraulic modelling to understand the impact on flow	Implementation of best practice mitigation measures for the intake structure. Abstraction conditions to be set in line with Hands off Flows (HoF). Any watercourses of aquatic habitat	1	

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							and velocity as a result of the abstraction and upstream discharge. 5) Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to abstraction and discharges/transfers. 6) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	value should be realigned to re-provide lost habitat and flow into the main rivers.		
GB20503 3000060	Old Bedford River / River Delph (inc The Hundred Foot Washes)	Low / Low	2	Possible	Possible	No	1) Ongoing refinement of the design. 2) Hydraulic modelling to understand the impact on flow and velocity as a result of the abstraction. 3) Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the abstraction. 4) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	Implementation of best practice mitigation measures for the intake structure. Abstraction conditions to be set in line with Hands off Flows (HoF).	1	Assumes pipeline crossings are trenchless under large watercourses.
GB10503 2050381	Nene – Islip to tidal	Low / Low	2	Possible	Possible	No	1) Ongoing refinement of the design.	Implementation of best practice	1	

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							2) Hydraulic modelling to understand the impact on flow and velocity as a result of the transfer and discharge, including consideration of cumulative effects. 3) Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the abstraction and discharge, including consideration of cumulative effects. With focus on discharge from Counter Drain, due to anticipated poor quality water. 4) Hydraulic modelling is required to determine the impact of transfer and discharge on downstream flow regime, including consideration of cumulative effects. 5) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	mitigation measures for the outfall structure.		
GB20503 3000010	Counter Drain (Sutton and Mepal IDB incl. Cranbrook Drain)	Low / Low	1	Possible	Possible	No	1) Ongoing refinement of the design. 2) Hydraulic modelling to understand the impact on flow and velocity as a result of the abstraction. 3) Request for further specific details of mitigation measures assessment and RBMP measures	Implementation of best practice mitigation measures for the intake structure. Abstraction conditions to be set in line with	1	Assumes pipeline crossings are trenchless under large watercourses.

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							(including A/HMWB measures where relevant) from the Environment Agency.	Hands off Flows (HoF).		
GB20503 3000020	Counter Drain (Manea and Welney IDB)	Low / Low	1	No	No	No	1) Ongoing refinement of the design. 2) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	N/A	1	
GB20503 3000030	Counter Drain (Upwell and Outwell IDB)	Low / Low	1	No	No	Possible	1) Ongoing refinement of the design. 2) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	N/A	1	
GB53050 3200200	Nene	Low / Low	1	No	No	No	1) Ongoing refinement of the design. 2) Hydraulic modelling to understand the impact on freshwater flow as a result of the upstream abstraction and reduction in discharge from Counter Drain. 3) Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the upstream abstraction and discharge. 4) Request for further specific details of mitigation measures assessment and RBMP measures	N/A	1	

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							(including A/HMWB measures where relevant) from the Environment Agency.			
GB10503 2050382	Mortons Leam	Low / Low	1	No	No	No	1) Ongoing refinement of the design. 2) Hydraulic modelling to understand the impact on flow and velocity as a result of the transfer and discharge. 3) Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the transfer and discharge. 4) Hydraulic modelling is required to determine the impact of transfer and discharge on downstream flow regime. 5) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	N/A	1	
GB53050 3311300	Wash Inner	Low / Low	0	No	No	No	1) Ongoing refinement of the design. 2) Hydraulic modelling to understand the impact of reduced freshwater flow as a result of the abstraction upstream. 3) Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to upstream abstraction.	N/A	0	

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							4) Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.			

3.20 Holland on Sea desalination (Seawater) 26Ml/d (EXS10)

3.20.1.1 Two water bodies were identified as requiring further assessment: GB650503520001: Essex coastal water body and GB40503G000400: Essex Gravels groundwater body.

3.20.1.2 The Level 2 WFD assessment for the Essex coastal water body identified a precautionary deterioration risk (impact score 2) to biology (invertebrates and phytoplankton) and supporting elements (mitigation measures assessment) prior to consideration of mitigation measures. This is due to the desalination discharge (which will be saline) which could have an adverse impact on biology and on marine protected areas, and the new intake structure could potentially increase the physical modification pressures of this water body.

3.20.1.3 The HRA considers the implications of the works on the marine protected areas and has concluded that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan. Further details can be found in Sub-report A Habitats Regulation Assessment of this WRMP24.

3.20.1.4 Further investigations are required to confirm this assessment including:

- Hydroecological study on impact of intakes and outfall on biology and water quality, particularly the impact of saline discharge; this could include hydrodynamic modelling to confirm the extent of any changes in relation to the WFD water body.
- Investigation of the impact saline discharge will have on other physicochemical parameters.
- Further information about construction and operation of the option.

3.20.1.5 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.20.1.6 The Level 2 WFD assessment for the Essex Gravels groundwater body identified a precautionary deterioration risk (impact score 2) to quantitative GWDTE test without consideration of mitigation measures. This is due to construction dewatering which could lead to temporary reductions in groundwater levels potentially leading to deterioration of a SSSI site. The assessment did not indicate any risk to achieving good status nor future achievement of water body objectives.

3.20.1.7 The proposed mitigation in Table 3.17 reduces the impact to minor, localised effects (impact score 1) and therefore if implemented, there is no risk of deterioration of the water body status. However, further investigations are recommended to confirm the outcomes of this assessment:

- Investigation into potential dependency of SSSI on groundwater.
- Further information about construction and operation of the option.

3.20.1.8 A summary of the Level 2 WFD assessment is included in Table 3.17 and detailed outputs are presented in Appendix C.

Table 3.17: Holland on Sea desalination (Seawater) 26Ml/d (EXS10) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB40503 G000400	Essex Gravels	Low / Low	2	Possible	No	No	Investigation into potential dependency of SSSI on groundwater. Further information about how the option will be operated.	Use of Clay bunds in pipeline route where groundwater potentially encountered. Where possible ensure shafts for horizontal directional drilling (HDD) launch and reception are located outside of the SSSI. Shafts to be sealed to ensure minimal groundwater egress after construction.	1	-
GB65050 3520001	Essex (coastal)	Low / Low	2	Possible	Possible	No	Hydroecological study on impact of intakes and outfall on biology and water quality, particularly the impact of concentrated saline discharge. Investigation of impact saline discharge will have on other physicochemical parameters. Further information about how the option will be operated.	Fish and eel screening at new intake. Minimisation of changes to hydrological regime through adjustment of abstraction conditions. Design of desalination process and outfall structure in line with best practice to meet acceptable environmental requirements.	1	Consideration of potential implications of discharging concentrated saline water close to protected sites – HRA concludes that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan.

3.21 Mablethorpe desalination seawater (50Ml/d) (LNE6)

3.21.1.1 Two water bodies were identified as requiring further assessment: GB640402492000: Lincolnshire coastal water body and GB40501G401600: South Lincolnshire Chalk Unit groundwater body.

3.21.1.2 The Level 2 WFD assessment (Table 3.18) for the Lincolnshire coastal water body identified a precautionary deterioration risk (impact score 2) to biology (angiosperms, invertebrates and phytoplankton), water quality (dissolved inorganic nitrogen and dissolved oxygen) and mitigation measures assessment, prior to consideration of mitigation. This is due to changes in flow and hydromorphology from the new abstraction and changes in water quality and morphology from the desalination discharge (which will be saline) on biology and protected sites. The assessment did not indicate any risk to achieving good status, nor future achievement of water body objectives. The HRA considers the implications of the works on the marine protected areas and has concluded that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan. Further details can be found in Sub-report A Habitats Regulation Assessment of this WRMP24.

3.21.1.3 Further investigations are required to confirm this assessment including:

- Investigation into the impact of new intake and discharge on hydromorphology and physical modification pressures in this water body.
- Hydroecological study on impact of intakes and outfall on biology and water quality, particularly the impact of saline discharge, this could include hydrodynamic modelling.
- Further details on design and construction methodology, particularly with regards to the construction of the intake and outfall pipelines.

3.21.1.4 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.21.1.5 The Level 2 WFD assessment (Table 3.18) for the South Lincolnshire Chalk Unit groundwater body identified a precautionary deterioration risk (impact score 2) to groundwater levels and flow and chemical status without consideration of mitigation measures. This is due to temporary changes to groundwater flow and levels as a result of a new pipeline crossing of the Salfleetby-Theddlethorpe Dunes SSSI (which is a GWDTE) and due to potential requirements for construction dewatering of the intake and outfall structures. Further investigations are required to confirm this assessment including:

- Further information on design and construction methodology, particularly with regards to the construction of the intake and outfall pipelines.
- Hydrogeological investigation into the impact of temporary dewatering on saline intrusion, particularly focussing on the area beneath the SSSI.

3.21.1.6 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.21.1.7 A summary of the Level 2 WFD assessment is included in Table 3.18 and detailed outputs are presented in Appendix C.

Table 3.18: Mablethorpe Desalination Seawater (50Ml/d) (LNE6) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB640402492000	Lincolnshire (coastal)	Low / Low	2	Possible	Possible	No	Investigation into the impact of new intake and discharge on hydromorphology and physical modification pressures in this water body. Hydroecological study on impact of intakes and outfall on biology and water quality, particularly the impact of saline discharge. Further details on design and construction methodology, particularly with regards to the construction of the intake and outfall pipelines.	Fish and eel screening at new intake. Design of desalination process and outfall structure in line with best practice to meet acceptable environmental requirements.	1	Consideration of potential implications of discharging concentrated saline water close to protected sites.– HRA concludes that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan.
GB40501G401600	South Lincolnshire Chalk Unit	Low / Low	2	Possible	No	No	Further details on design and construction methodology, particularly with regards to the construction of the intake and outfall pipelines. Hydrogeological investigation into the impact of temporary dewatering on saline intrusion, particularly focussing on the area beneath the SSSI.	Minimise requirement for dewatering in and around the SSSI.	1	None.

3.22 Bacton desalination (seawater) (25Ml/d) (NTB17)

3.22.1.1 One water body was identified as requiring further assessment: GB650503520003: Norfolk East coastal water body.

3.22.1.2 The Level 2 WFD assessment (Table 3.19) identified a precautionary deterioration risk (impact score 2) to biology (phytoplankton), water quality (dissolved inorganic nitrogen and dissolved oxygen) and artificial modifications (mitigation measures assessment). This is due to the new abstraction and desalination discharge (which will be saline). The assessment also highlights a potential impediment to achieving future objectives for dissolved inorganic nitrogen. This is also due to changes in water quality related to the desalination discharge, along with the potential impacts on marine protected areas.

3.22.1.3 The HRA considers the implications of the works on the marine protected areas and has concluded that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan. Further details can be found in Sub-report A Habitats Regulation Assessment of this WRMP24.

3.22.1.4 Further investigations are required to confirm this assessment including:

- Investigation into the impact of new intake and discharge on hydromorphology and physical modification pressures in this water body.
- Hydroecological study on impact of intakes and outfall on biology and water quality, particularly the impact of saline discharge, this could include hydrodynamic modelling.
- Further details on design and construction methodology, particularly with regards to the construction of the intake and outfall pipelines.

3.22.1.5 Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.22.1.6 A summary of the Level 2 WFD assessment is included in Table 3.19 and detailed outputs are presented in Appendix C.

Table 3.19: Bacton desalination (Seawater) (25Ml/d) (NTB17) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB650503520003	Norfolk East (coastal)	Low / Low	2	Possible	No	No	Detailed review of all additional baseline ecological WFD data, including results of any surveys already undertaken for this option. Further information about how the option will be operated. Hydrodynamic modelling of impacts of abstraction and discharge into coastal water body on flow, sedimentation, bathymetry and water quality. Review of mitigation measures assessment for this water body to identify whether additional structures from this option will lead to impacts on mitigation measures assessment.	Fish and eel screening at new intake. Minimisation of changes to hydrological regime through adjustment of abstraction conditions. Design of desalination process and outfall structure in line with best practice to meet acceptable environmental requirements.	1	Consideration of potential implications of discharging concentrated saline water close to protected sites.– HRA concludes that the WRMP24 contains measures that would ensure compliance with the policies of the marine plan.

3.23 Lincolnshire Central to Ruthamford North potable transfer (75Ml/d) (RTN30)

3.23.1.1 For this option two groundwater bodies were identified as requiring further assessment: GB40502G402400: Nene Mid Lower Jurassic Unit and GB40501G445500: Northampton Sands.

3.23.1.2 The Level 2 WFD assessment for both groundwater bodies identified minor effects (impact score 1) to quantitative status elements and chemical status elements, prior to consideration of mitigation. This is due to construction stage dewatering leading to temporary reductions in groundwater levels and flow in surface watercourses and nearby the GWDTE (Castor Flood Meadows SSSI). There is also potential for dewatering activities to mobilise existing contaminated groundwater. Mitigation is proposed which concludes that the WFD compliance risk remains minor localised (impact score 1).

3.23.1.3 Further investigations are required to confirm this assessment including:

- Additional groundwater monitoring to understand groundwater levels and how they interact with the option to ensure appropriate mitigation is included.
- Further investigation into impact on groundwater levels of construction dewatering and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction on the SSSI, if required.
- Further information about construction and operation of the option.

3.23.1.4 A summary of the Level 2 WFD assessment is included in Table 3.20 and detailed outputs are presented in Appendix C.

Table 3.20: Lincolnshire Central to Ruthamford North potable transfer (75Ml/d) (RTN30) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40502 G402400	Nene Mid Lower Jurassic Unit	Low / Low	1	No	No	No	Additional groundwater monitoring to understand groundwater levels and how they interact with the option. Further investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of Clay bunds in pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved further than 500m (defined as potential area of influence) from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	1
GB40501 G445500	Northampton Sands	Low / Low	1	No	No	No	Groundwater monitoring to understand groundwater levels and how they interact with the option. Investigation into impact on groundwater levels of dewatering for construction and consideration of requirement to return water to the ground (through recharge trenches) to help minimise the impact of construction, if required. Further information about option.	Use of Clay bunds in pipeline route where groundwater potentially encountered. If possible, shafts for river crossings should be moved further than 500m (defined as potential area of influence) from SSSI sites. Shafts to be sealed to ensure minimal groundwater egress after construction.	1

3.24 Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d) (RTN17)

3.24.1.1 The WFD assessment for this option was conducted as part of the wider Lincolnshire Reservoir SRO project at the RAPID Gate 2 stage and the outcomes of the assessment have been reviewed in line with the strategic approach at plan level outlined in Section 1.7. This option has been selected within Plan B and all three alternative plans, so is essential for the deliverability of the WRMP24 (see Decision Making Report technical supporting document for detail).

3.24.1.2 A summary of the Level 2 findings is presented here. Seven river water bodies were identified as requiring further assessment:

- GB104028053110: Trent from Soar to The Beck
- GB105030056515: Swaton Drains
- GB105030056780: Witham – conf Cringle Bk to conf Brant
- GB105030062370: Witham – conf Brant to conf Catchwater Drain
- GB205030062425: Witham – conf Catchwater Drain to conf Bain
- GB205030062426: Lower Witham – conf Bain to Grand Sluice
- GB105030056520: South Beck

3.24.1.3 The Level 2 assessment for the River Trent identified potential deterioration risks (impact score 2 prior to mitigation) to biological and physio-chemical quality elements, due to reduction in flow leading to changes in water quality (from reduced dilution downstream) caused by the new abstraction required to support the reservoir. It also identified potential impediments to meeting Good Ecological Status and future objectives, for the biological and physio-chemical quality elements due to this reduction in flow.

3.24.1.4 The Level 2 assessments for the four Witham and Lower Witham river water bodies identified potential deterioration risks (impact score 3 prior to mitigation) to biological, physio-chemical and hydromorphology supporting elements, due to the discharge and transfer of water from the River Trent through the Witham for abstraction in the Lower Witham to supply the reservoir. It also identified possible impediments to meeting Good Ecological Status and future objectives for some water quality elements.

3.24.1.5 For Swaton Drains the Level 2 assessment identified deterioration risks (impact score 3 prior to mitigation) to flow and biology (invertebrates), as well as increasing artificial modification (mitigation measures assessment) due to loss of watercourse open channels and flow from the presence of the reservoir (which would cover 28% of the catchment, primarily minor drainage channels). It also identified possible impediments to meeting Good Ecological Status and future objectives, for water quality (phosphate), biology (macrophytes and phytobentos combined) and flow (hydrological regime).

3.24.1.6 Detailed further studies are underway at a project level to better understand the risks to water body status posed by the option on these water bodies, and refinement of design options. Preliminary mitigation requirements have been identified in this plan level assessment, which would be confirmed and delivered following detailed project level investigations and assessments. The post-mitigation scoring at the plan level is based on the expectation that project level design development (including assessment of any project-level alternatives for different components) will be in line with WFD objectives, and subject to ongoing WFD compliance assessment review prior to and as part of application for consent.

Following further investigation, design and mitigation development, it is anticipated the WFD non-compliance risk can be reduced to minor localised (impact score 1).

3.24.1.7 For South Beck the Level 2 assessment identified minor effects (impact score 1 prior to mitigation) to biological, hydromorphological and physico-chemical quality elements. This is due to the loss of open channel habitat and flow from the presence of the reservoir (which covers 4% of the catchment). The assessment did not indicate a risk to achieving good status nor future achievement of water body objectives.

3.24.1.8 While the WFD assessment, prior to mitigation, identifies a number of precautionary compliance risks, it is considered at this plan level that mitigation and design adaptations will be capable of being sufficient to manage WFD compliance issues. This SRO project also offers significant multi benefit opportunities to improve the water environment and wider environment. These opportunities are being identified and investigated further as part of the SRO project and will be reported through the SRO RAPID gate process.

3.24.1.9 A summary of the Level 2 WFD assessment is included in Table 3.21 and detailed outputs are presented in Appendix C.

Table 3.21: Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d) (RTN17) Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
GB105030056520	South Beck	Low / Low	1	No	No	No	On-going refinement of the design. Land drainage and site drainage design to understand which watercourses will be diverted/realigned and which are lost. Hydrology study to understand potential reduction in catchment area (and impacts on flow). Request for further specific details of mitigation measures assessment and RBMP measures (including Artificial/Heavily modified water body (A/HMWB) measures where relevant) from the Environment Agency	Any large watercourses should be realigned to provide lost habitat and flow into the main rivers. Further details on mitigation measures assessment from the Environment Agency to understand impact of the option and also to identify opportunities to improve the water body as part of the option.	1	
GB105030056515	Swaton Drains	Low / Low	3	Yes	Yes	No	On-going refinement of the design. Land drainage and site drainage design to understand which watercourses will be diverted/realigned and which are lost. Hydrology study to understand potential reduction in catchment area (and impacts on flow).	Need to offset loss of in-channel habitat and/or watercourse length. Flow support release of water from the reservoir could be considered to support flows but would need consideration of water quality.	1	

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	Further details on mitigation measures assessment from the Environment Agency to understand impact of the option and also to identify opportunities to improve the water body as part of the option.		
GB104028053110	Trent from Soar to The Beck	Low / Low	2	No	No	No	On-going refinement of the design. Hydrology study to understand potential impact of reduced flow in the catchment on hydrological regime and water quality (including both continuous and spot sample water quality monitoring). Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency.	Implementation of best practice mitigation measures for the intake structure. Further water quality modelling and monitoring (both continuous and spot sampling) is required to determine the extent of impacts on the physico-chemical quality elements. This will help determine appropriate mitigation measures.	1	
GB105030056780	Witham – conf Cringle Bk to conf Brant	Low / Low	3	Yes	Yes	Yes	On-going refinement of the design. Hydrology study to understand the impact of increased flow in the catchment on hydrological regime and biological status elements.	Invasive non-native species (INNS) treatment provided between River Trent abstraction and the transfer to the River Witham.	1	

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the discharge. Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency. Hydraulic modelling to understand the impact on flow and velocity as a result of the abstraction.	Further water quality modelling (both continuous and spot sampling) is required to determine the extent of impacts within this catchment. This will help determine appropriate mitigation measures.		
GB105030062370	Witham – conf Brant to conf Catchwater Drain	Low / Low	3	Yes	Yes	Yes	On-going refinement of the design. Hydrology study to understand the impact of increased flow in the catchment on hydrological regime and biological status elements. Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the discharge. Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB	INNS treatment provided between the River Trent abstraction and the transfer to the River Witham Further water quality modelling (both continuous and spot sampling) is required to determine the extent of impacts within this catchment. This will help determine appropriate mitigation measures.	1	

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
							measures where relevant) from the Environment Agency. Hydraulic modelling to understand the impact on flow and velocity as a result of the abstraction.			
GB205030062425	Witham – conf Catchwater Drain to conf Bain	Low / Low	3	Yes	Yes	Yes	On-going refinement of the design. Hydrology study to understand the impact of increased flow in the catchment on hydrological regime and biological status elements. Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the discharge. Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency. Hydraulic modelling to understand the impact on flow and velocity as a result of the abstraction.	INNS treatment provided between the River Trent abstraction and the transfer to the River Witham Further water quality modelling (both continuous and spot sampling) is required to determine the extent of impacts within this catchment. This will help determine appropriate mitigation measures.	1	
GB205030062426	Lower Witham –	Low / Low	3	Yes	Yes	Yes	On-going refinement of the design.	INNS treatment provided between the River Trent abstraction and the	1	Assumes that abstraction from this water body will be timed to

Water body ID	Water body name	Confidence in WFD data / Confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score	Further comments
	conf Bain to Grand Sluice						Hydrology study to understand the impact of increased flow in the catchment on hydrological regime and biological status elements. Water quality modelling and monitoring (both continuous and spot sampling) to understand the impact of changes in water quality and therefore biology due to the discharge. Request for further specific details of mitigation measures assessment and RBMP measures (including A/HMWB measures where relevant) from the Environment Agency. Hydraulic modelling to understand the impact on flow and velocity as a result of the abstraction.	transfer to the River Witham. Implementation of best practice mitigation measures for the intake structure. Further water quality modelling (both continuous and spot sampling) is required to determine the extent of impacts within this catchment. This will help determine appropriate mitigation measures.		coincide with the discharges into the upstream water body (GB105030056780) to ensure no net loss in flow downstream of abstraction point.

3.25 WINEP Pant

3.25.1.1 Two water bodies were identified as requiring further assessment: GB40502G400900: North Essex Lower London Tertiaries and GB40501G400700: North Essex Chalk groundwater bodies.

3.25.1.2 The Level 2 WFD assessments for both of these water bodies identified minor effects (impact score 1) to quantitative water balance element and quantitative surface water dependent status test. These are due to an increase in abstraction from the groundwater bodies. Investigations were carried as part of the AMP7 WINEP investigation[7]. This groundwater body assessment shows that when the North Essex Chalk and Lower London Tertiaries aquifer are considered together, as they are in hydraulic connection, then there is a groundwater surplus (under the water balance test). Therefore, the impact of this increase in abstraction is not anticipated to lead to a risk of deterioration.

3.25.1.3 A summary of the Level 2 WFD assessment is included in Table 3.22 and detailed outputs are presented in Appendix C.

[7] AMP7 WINEP Investigation and Option Appraisal, North Essex Chalk, April 2022

Table 3.22: WINEP River Pant Level 2 WFD summary

Water body ID	Water body name	Confidence in WFD data / confidence in option design	Maximum impact score (pre-mitigation)	Deterioration between status classes	Compromises water body objectives	Assists attainment of water body objectives	Requirements to improve confidence	Mitigation measures	Post mitigation impact score
GB40502 G400900	North Essex Lower London Tertiaries	Low / Low	1	Possible	No	No	Further information about option.	N/A	1
GB40501 G400700	North Essex Chalk	Low / Low	1	Possible	No	No	Further information about option.	N/A	1

4 Cumulative effects assessment of WRMP24 and other plans for Plan B

4.1 Overview

4.1.1.1 In addition to the WRMP24, other planning applications and projects along with other water company WRMP options could lead to the potential for cumulative effects to some WFD water bodies. This section sets out the assessment of the potential implication for WFD compliance of multiple options and plans. This assessment reviews the WFD compliance risks of cumulative effects of the WRMP24 Plan B options along with other relevant planning allocations, applications and other water company published dWRMP24s.

4.1.1.2 The cumulative effects assessment identified 59 water bodies where multiple options could occur. In the majority of these water bodies, the assessment does not identify any increased risk to WFD compliance. However, in the remaining 17 water bodies, some potential for an increased WFD compliance risk has been identified. The cumulative effects assessment was completed based on the WFD compliance risks for WRMP24 Plan B, prior to consideration of project level mitigation and is therefore considered to be sufficiently conservative. At this plan level, it is anticipated that design adaptation and mitigation measures undertaken by Anglian Water and/or those responsible for other strategic projects and programmes would be capable of avoiding or mitigating any deterioration risk that might arise from cumulative effects.

4.2 Other draft water resource management plans

4.2.1.1 Anglian Water has attended regional steering groups with other water companies, where discussions about potential cumulative effects between water company options have been highlighted. Anglian Water recognise there is the potential for cumulative effects to water bodies from its WRMP24 and the options selected in other water company dWRMP24s.

4.2.1.2 Table 4.1 lists the relevant water companies between whom cumulative effects could occur, with a summary of the level of information available within their dWRMP24s. It should be noted that while the published dWRMP24 plans have been used at the time of writing, it is anticipated that most water companies will be in the process of updating their plans. Therefore, the options and preferred plans may change, which could alter the conclusions of this cumulative effects assessment. The Regional Plans (Water Resources South East (WRSE) and Water Resources East (WRE) will include cumulative effects assessments using the WRMP24 options for all water companies that fall under their respective region.

Table 4.1: Water companies dWRMP24s reviewed for WFD cumulative effects

Water company	Level of information available (subject to ongoing update of dWRMP)
Affinity Water	All necessary information available for cumulative effects assessment.
Cambridge Water	All necessary information available for cumulative effects assessment.
Essex and Suffolk Water	All necessary information available for cumulative effects assessment.
Severn Trent Water	Limited information in published dWRMP report on which to base cumulative effects assessment.
Thames Water	All necessary information available for cumulative effects assessment.
Yorkshire Water	Limited information in published dWRMP report on which to base cumulative effects assessment.

4.3 Other programmes and strategic projects

4.3.1.1 Planning applications, including development consent orders (DCO) and planning allocations, which could lead to cumulative effects on water bodies have been considered. Table 4.2 lists the various relevant planning projects that have been included in the assessment, as they have the potential to impact on the same water bodies as one or more of the WRMP24 Plan B options.

Table 4.2: Planning projects included within same water bodies as Plan B options

Project Name	Description
Local Planning Allocations (LPA)	
Cove Farm, Westwoodside	Sand and Gravel mineral extraction (new / extension of existing quarry)
Cove Farm, Westwoodside (Extension)	Sand and Gravel mineral extraction (new / extension of existing quarry)
Kettleby Parks Quarry	Sand mineral extraction (new / extension of existing quarry)
Melton Ross Quarry	Chalk mineral extraction (new / extension of existing quarry)
South Ferriby Quarry	Chalk and Shale mineral extraction (new / extension of existing quarry)
Hibaldstow Quarry	Limestone mineral extraction (new / extension of existing quarry)
Hibaldstow Quarry (Extension)	Limestone mineral extraction (new / extension of existing quarry)
Manton Quarry	Limestone mineral extraction (new / extension of existing quarry)
Kirton Quarry	Limestone mineral extraction (new / extension of existing quarry)
Barton East	Clay mineral extraction (new / extension of existing quarry)
Messingham Quarry	Silica Sand mineral extraction (new / extension of existing quarry)
Low Welwood Quarry	Clay mineral extraction (new / extension of existing quarry)
Land North of Brigg Road, Messingham	Silica Sand mineral extraction (new / extension of existing quarry)
Land at Holme Road	Silica Sand mineral extraction (new / extension of existing quarry)
Land South of Composition Lane, Witheringham	Silica Sand mineral extraction (new / extension of existing quarry)
Land North of Chapel Lane	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land West of Bilney Road	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land West of Cuckoo Lane	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land South of Reepham Road	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land at Mayton Wood, Coltishall Road, Buxton	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land at Grange Farm, Buxton Road, Horstead	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land North of Stanninghall Quarry	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land at Grange Farm (Between Spixworth Road and Coltishall Lane)	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land off East Winch Road, Mill Drove	Carstone mineral extraction (new / extension of existing quarry)
Land at Oak Field, West of Lynn Road	Sand and Gravel mineral extraction (new / extension of existing quarry)

Project Name	Description
Land East of Grandcourt Farm	Silica Sand mineral extraction (new / extension of existing quarry)
Land at Mintlyn South	Silica Sand mineral extraction (new / extension of existing quarry)
Land North of Holt Road	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land at Lord Anson's Wood near North Walsham	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land at Pinkney Field, Briston	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land South of Holt Road	Sand and Gravel mineral extraction (new / extension of existing quarry)
Land at Manor Farm (East of Crab Apple Lane)	Sand and Gravel mineral extraction (new / extension of existing quarry)
Northampton Railway Station, Rail freight and Adjoining Site	The development of a permanent and secure multi-storey car park on the Northampton Railway Station site with access to the main railway station building will be supported in order to create sufficient on-site car parking, bicycle and motorcycle parking to cater for the future growing demand of rail usage.
Large Scale Developments	
HS2 Phase 1 London to West Midland	Phase 1 delivery of HS2 scheduled for completion in 2029. WFD assessments will have been undertaken for this previously.
Bramford to Twinstead	Bramford to Twinstead is a 29km network reinforcement, to the west of Ipswich and south of Sudbury on the Suffolk / Essex border.
Cottam Solar Project	The Cottam Solar Project is developing proposals for a new solar and energy storage project that would cross the county border between Lincolnshire and Nottinghamshire.
Gate Burton Energy Park	Gate Burton Energy Park is proposed as being built on land near Gate Burton in Lincolnshire. The electricity the proposed energy park generates will be exported via a connection into the existing national electricity transmission system at National Grid's Cottam substation in Nottinghamshire.
Heckington Fen Solar Park	Located near the village of Heckington in North Kesteven, Lincolnshire, the project combines a large-scale solar park and energy storage facility.
Longfield Solar Farm	Longfield Solar Farm is a new solar energy farm, co-located with battery storage.
Sheringham and Dudgeon Extension Project	This project aims to increase the generating capacity of both the Sheringham Shoal Offshore Wind Farm and the Dudgeon Offshore Wind Farm.
Cambridge South Infrastructure Enhancement (Cambridge South Station)	Application for a new railway in South Cambridge.
Cambridge Wastewater Treatment Plant Relocation	Anglian Water is proposing to relocate its Cambridge Wastewater Treatment Plant to enable the regeneration of North East Cambridge.
London Luton Airport Expansion	Expansion of London Luton Airport from its current permitted cap of eighteen million passengers per annum (MPPA) up to thirty MPPA, including: new terminal capacity; additional taxiways and other transport infrastructure; the construction of landside support buildings; surface access adjustments; mitigation works and other associated development.
Immingham Eastern Ro-Ro Terminal	A new roll-on/roll-off facility comprising a new jetty with three berths, improved hardstanding, Terminal buildings and an internal side bridge to cross over existing port infrastructure.

Project Name	Description
North Lincolnshire Green Energy Park	The Project consists of an Energy Recovery Facility (ERF) converting up to 650,000 tonnes per annum of Refuse Derived Fuel (RDF) to generate a maximum of 95 Mega Watts of electrical output (Mwe) and/or 380 Mega Watts of thermal output (MWt).
Mallard Pass Solar Project	Mallard Pass Solar Farm is proposed to be located on agricultural land either side of the East Coast Main Line near Essendine. It is a proposal for a new solar farm with infrastructure to connect to the national grid.
West Burton Solar Project	West Burton Solar Project is developing proposals for a new solar and energy storage project that would cross the county border between Lincolnshire and Nottinghamshire.

4.4 Outcomes of cumulative effects assessment

4.4.1.1 The cumulative effects assessment identified 59 WFD water bodies which are expected to be affected by at least one Plan B option and one or more planning projects or other water company dWRMP24. The cumulative effects assessments for these water bodies are set out in Appendix E. Of these water bodies, 17 were identified as having some potential to lead to an increased risk to WFD compliance due to cumulative effects. The potential for cumulative effects on WFD was identified in 17 water bodies as listed below:

- GB104028053110: Trent from Soar to The Beck
- GB104028058480: Trent from Carlton-on-Trent to Laughton Drain
- GB104029067520: Ancholme from Bishopbridge to the Humber
- GB104029067605: Barrow Beck
- GB105030062390: Skellingthorpe Main Drain
- GB105033047670: Middleton Stop Drain
- GB105034050932: Bure (Scarrow Beck to Horstead Mill)
- GB105034051020: Wendling Beck
- GB105034055740: Scarrow Beck
- GB105034055881: Wensum US Norwich
- GB40401G401500: North Lincolnshire Chalk Unit
- GB40401G444600: Grimsby Ancholme Louth Limestone Unit
- GB40402G990300: Lower Trent Erewash – Secondary Combined
- GB40501G400100: North Norfolk Chalk
- GB40501G400400: North West Norfolk Sandringham Sands
- GB40501G400500: Cam and Ely Ouse Chalk
- GB40503G000400: Essex Gravels

4.4.1.2 These assessments are based on the limited data available on planning applications or allocations, and on published information within the other water companies dWRMP24s which have been completed at a strategic plan level. Therefore, there is an inherent level of uncertainty about how elements of the assessment may change, with further information required to identify and understand WFD compliance risks. This may require further details of planning applications, further details of other water company options or further investigations into the Anglian Water Plan B WRMP24 options.

4.4.1.3 Further assessments will also be carried out within the Regional Plans using the WRMP24 options for all options within their region. The results may demonstrate new or different potential WFD compliance risks, which may result in changes being needed to one or more water

company final WRMP24. If the work concludes that at the strategic plan-making scale the information available is simply insufficient to be conclusive then more detailed investigations would be needed. At this plan level, it is anticipated that design adaptation and mitigation measures undertaken by Anglian Water and/or those responsible for other strategic projects and programmes would be capable of avoiding or mitigating any deterioration risk that might arise from cumulative effects. If further investigations into cumulative effects related to the WRMP24 Plan B and other plans or other water company WRMP24 options are needed, these would likely need to progress as a partnership activity with all affected water companies and the relevant statutory environmental bodies.

5 Summary and conclusions of Plan B

5.1 Level 1 summary

5.1.1.1 For the WRMP24 Plan B, 50 supply-side options were selected. In addition, five WINEP options were identified.

5.1.1.2 The Plan B options have been subject to a WFD assessment. Of these, two were SRO projects. The WFD assessments for the two SRO projects were conducted under the relevant SRO Regulators Alliance for Progressing Infrastructure Development (RAPID) gated process. Summaries of these assessments are provided in this report.

5.1.1.3 The Level 1 WFD assessments indicated that over half of the 55 options (28 supply-side options and four WINEP options) have a very low risk of impacting on WFD status and objectives. At this point in time these options are considered to be compliant with the WFD, and do not merit further assessment. These options are set out in Table 5.1 below.

Table 5.1: WRMP24 Plan B options which require no additional assessment

Option ID	Description
CAM4	Ruthamford South to Cambridge Water potable transfer (50Ml/d)
LNC25	Lincolnshire East to Lincolnshire Central potable transfer (29Ml/d)
EXC3	Essex South to Essex Central potable transfer (10Ml/d)
EXC7	Backwash water recovery, Essex South WTW (0.3Ml/d)
FND26	Backwash water recovery, Fenland WTW (0.2Ml/d)
NAY1	Norwich and the Broads to Aylsham potable transfer (3Ml/d)
NBR6	Fenland to Norfolk Bradenham potable transfer (50Ml/d)
NEH3	Suffolk Thetford to Norfolk East Harling potable transfer (5Ml/d)
SUE23	Suffolk East WTW Upgrade (1.7Ml/d)
SUE24	Suffolk Sudbury to East Suffolk potable transfer (10Ml/d)
SUT6	Backwash water recovery, Suffolk East WTW (0.05Ml/d)
SWC8	Cambridge to Suffolk West Cambs potable transfer (50Ml/d)
EXS7	Backwash water recovery, Essex South WTW (0.3Ml/d)
NBR9	Fenland to Norfolk Bradenham potable transfer (50Ml/d)
NNC5	North Norfolk Coast WTW backwash water recovery (0.18Ml/d)
LNE3	Backwash water recovery, Lincolnshire East WTW (1.3Ml/d)
NAY4	Backwash water recovery, Norfolk Aylsham WTW (0.75Ml/d)
NED3	Backwash water recovery, Norfolk East Dereham WTW (0.1Ml/d)
NAY5	Backwash water recovery, Norfolk Aylsham WTW (0.1Ml/d)
SUT5	Norfolk Bradenham to Suffolk Thetford (15Ml/d)
SUE25	Backwash water recovery, Suffolk East WTW (0.17Ml/d)
LLN1	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3.5Ml/d)
LNB1	Ruthamford North to Bourne potable transfer (20Ml/d)
LNC16	Ruthamford North to Lincolnshire Central potable transfer (20Mld/).
LNC28	Bulk trade agreement – River Trent (7Ml/d)
NWY1	Norwich and the Broads to Norfolk Wymondham potable transfer (5Ml/d).
RTS24	Ruthamford North to Ruthamford South potable transfer (75Ml/d)

Option ID	Description
RTC3	Ruthamford South to Ruthamford Central potable transfer (20Ml/d)
WINEP Options	
Brett	River Support Scheme with 2Ml/d at Lavenham, 2Ml/d at either Semer or Raydon and 2Ml/d at Shelley.
Colne	River support from Great Yeldham (at current daily licenced quantity) plus River Restoration.
Gipping	An optimised combination of river restoration options #11, #12, and #13 (Reach #2 (Brantham Road (B1113), south of Great Blackenham, to the railway crossing west of Ipswich) and reach #3 (from the railway crossing west of Ipswich to the tidal limit).
Stiffkey	Houghton St Giles river support to Q90 RA flows at Warham All Saints (18Ml/d).

5.2 Level 2 summary

5.2.1.1 WFD Level 2 assessments were completed for the remaining 22 supply-side options and one WINEP option. The Level 2 assessments for the two SRO projects were conducted under the relevant SRO RAPID gated process and have been updated within this report to reflect the strategic plan level assessment undertaken for Plan B options. Similarly, the WFD assessment for the drought option was carried out under the drought plan project, and a summary of this assessment has been included in this report. All options requiring further assessment are set out in Table 55.2.

Table 55.2: WRMP24 Plan B options which required additional assessment at Level 2

Option ID	Description	Origin of assessments completed if required
FND22	Marham abstraction (7.9Ml/d up to 2039, 12.3Ml/d after 2039)	-
LNC30	Lincolnshire Central WTW Upgrade (3.2Ml/d)	-
LNE11	Lincolnshire East Groundwater (7.5Ml/d)	-
LNE12	Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039)	-
LNN3	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d)	-
NHL4	Norfolk East Harling to Norfolk Harleston potable transfer (5Ml/d)	-
NTB10	Norfolk Bradenham to Norwich and the Broads potable transfer (20Ml/d)	-
RTS16	Ruthamford South Drought permit (2.07Ml/d)	Drought permit option, included within the Anglian Water Drought Plan 2022, April 2022
RTS21	Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040)	-
SWC13	Suffolk West & Cambs groundwater relocation (2.6Ml/d)	-
NNC6	North Norfolk Coast WTW backwash water recovery (0.2Ml/d)	-
NHL7	Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d)	-
EXS19	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4Ml/d up to 2039, 13.9Ml/d after 2039)	-
NED2	Norfolk Bradenham to Norfolk East Dereham potable transfer (10Ml/d)	-
NNC4	Norfolk East Dereham to North Norfolk Coast potable transfer (10Ml/d)	-
SHB9	South Humber Bank Non-potable desalination (60Ml/d)	-
FND29	Fens Reservoir 50 MCM (usable volume) (44.4Ml/d)	Assessed under SRO RAPID gate process
EXS10	Holland on Sea desalination (seawater) 26Ml/d	-

Option ID	Description	Origin of assessments completed if required
LNE6	Mablethorpe desalination Seawater (50Ml/d)	-
NTB17	Bacton desalination (seawater) (25Ml/d).	-
RTN30	Lincolnshire Central to Ruthamford North potable transfer (75Ml/d)	-
RTN17	Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)	Assessed under SRO RAPID gate process
Pant	WINEP River Pant	WINEP mitigation option

5.2.1.2 A combination of the WFD assessment outcomes and expert judgement has identified that the majority of the supply-side options within Plan B are compliant with the WFD.

5.2.1.3 On a precautionary basis, risks to WFD compliance were identified for the remaining 17 options, prior to consideration of mitigation and further development. Of these 17 options, professional judgment has supported the assessment to conclude that, at a plan level:

- Two options; generic good practice and specific mitigation has been identified within the assessment which is anticipated will ensure WFD compliance.
- Five options; generic good practice mitigation has been identified in this assessment. Following recommended further investigations to provide evidence to support the professional judgment used at this stage, it is anticipated that the WFD risk will be reduced and the options will be WFD compliant.
- Ten options; generic good practice mitigation has been identified at this stage. Following recommended further investigations (to provide evidence to support the professional judgment used) and design development, it is anticipated that further specific mitigation will be identified to reduce the risk, and therefore options will be WFD compliant.

5.2.1.4 Options assessment at this stage has used high level design information, and as options are taken forwards additional refinements and assessment would be completed as they progress to further development. The information is considered appropriate at this stage of the plan level and does not affect the robustness of the assessment.

5.3 Summary of WFD assessment of WRMP24 Plan B

5.3.1.1 Where multiple supply-side or WINEP options within Plan B occur in the same water bodies, a cumulative effects assessment has been carried out. The cumulative effects assessment is based on both the WFD Level 2 assessment outcomes (Chapter 3) and Level 1 assessments (Chapter 2).

5.3.1.2 The review identified 57 water bodies where multiple options could be constructed and operate. The cumulative effects assessments for these water bodies are presented in Appendix D. These cumulative effects assessments have not identified any increased risks to WFD compliance as a result of multiple WRMP options in 55 of these water bodies.

5.3.1.3 Potential for cumulative effects have identified in two water bodies; the Wash Inner (GB530503311300) and Wash Outer (GB640523160000) transitional water bodies due to combined downstream impacts from Lincolnshire Reservoir (RTN17) and Fens Reservoir (FND29) options. 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 undertaken as part of the SROs assessment for Gate 3 of the RAPID gate process and is not available at the time of writing.

5.3.1.4 For the WRMP24, in addition to WINEP options, policy decisions have set out the requirement to cap abstraction licences, driven by WFD no deterioration. Guidance would reduce licences to recent actual average for time limited licences between 2022-2024 and for permanent licences by 2030. However, further assessment of the supply-demand balance completed between dWRMP24 and WRMP24 has shown that delivery of this initial scenario would be unfeasible. For the Plan B scenario, there will be a period of time where licences would be capped at recent actual peak before being reduced to recent actual average. During that period, if there is a sustained increase in abstraction above the average levels which is shown to give rise to deterioration risk, this may require an overriding public interest derogation under regulation 19 on a case-by-case basis, depending on licence specific investigations at the time. If necessary, an application for a derogation under WFD regulation 19 on the basis of overriding public interest would be submitted to the Environment Agency. The likelihood of an increase in abstraction leading to a risk of permanent WFD deterioration would be low. On balance, over the course of the plan period the reduction in sensitive abstractions is anticipated to deliver a significant benefit in WFD terms.

5.4 Cumulative effects assessment associated with programmes and strategic projects

5.4.1.1 It is recognised that there is the potential for cumulative effects to water bodies due to the WRMP24 Plan B, other planning applications and the options selected in other water company dWRMP24s. A cumulative effects assessment has therefore been conducted.

5.4.1.2 These assessments are based on the limited data available on planning applications or allocations, and on published information within the other water companies dWRMP24s which have been completed at a strategic plan level. Therefore, there is an inherent level of uncertainty about how elements of the assessment may change, with further information required to identify and understand WFD compliance risks. This may require further details of planning applications, further details of other water company options or further investigations into the Anglian Water Plan B WRMP24 options.

5.4.1.3 Further assessments will also be carried out within the Regional Plans using the WRMP24 options for all options within their region. The results may demonstrate new or different potential WFD compliance risks, which may result in changes being needed to one or more water company final WRMP24. If the work concludes that at the strategic plan-making scale the information available is simply insufficient to be conclusive then more detailed investigations would be needed. At this plan level, it is anticipated that design adaptation and mitigation measures undertaken by Anglian Water and/or those responsible for other strategic projects and programmes would be capable of avoiding or mitigating any deterioration risk that might arise from cumulative effects. If further investigations into cumulative effects related to the WRMP24 Plan B and other plans or other water company WRMP24 options are needed, these would likely need to progress as a partnership activity

5.5 Conclusions

5.5.1.1 Overall, the WRMP24 Plan B includes 50 supply-side options, five WINEP options and policy decisions, such as changes to agreed timescales for licence capping. A combination of the WFD assessment outcomes and expert judgment concludes that the options present a low risk to WFD compliance when considered at a strategic plan level, assuming that mitigation and design adaptations will be sufficient to manage WFD compliance issues.

5.5.1.2 The early identification at this plan stage of potential options which require further assessment allows the baseline conditions to be better understood, through completion of pre-construction WFD surveys, an iterative design process, and early opportunities for development of

appropriate mitigation. At all future stages there should be efforts seeking to eliminate and reduce adverse effects on the supporting quality elements and deliver enhancements.

5.5.1.3 The cumulative effects assessment of the WRMP24 has shown that there is no increase in WFD compliance risk due to the combined application of the WRMP24 options. Potential cumulative effects have been identified on two water bodies of the Wash estuary, due to combined downstream impacts from Lincolnshire Reservoir (SRO) and Fens Reservoir (SRO) options. 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 undertaken as part of the SROs assessment for Gate 3 of the RAPID gate process.

5.5.1.4 The inclusion of options in the WRMP24 Plan B does not remove the need for project-level WFD assessments. Future plans, projects or permissions may act in-combination with the WRMP24 and it is important to note that inclusion of options within the WRMP24 should not have any influence on future updated plan or project level WFD conclusions.

5.5.1.5 The potential for cumulative effects due to the combination of WRMP24 options and other planning projects and/or other water company options has been noted. These assessments are based on limited data and on the published information within the other water companies dWRMP24s. Therefore, further information is required to fully understand the WFD compliance risk. This may require further details of planning applications, further details of other water company options or further investigations into the Anglian Water Plan B WRMP24 options and will be undertaken at a project level. At this plan level, it is anticipated that design adaptation and mitigation measures undertaken by Anglian Water and/or those responsible for other strategic projects and programmes would be capable of avoiding or mitigating any deterioration risk that might arise from cumulative effects.

5.6 Next steps

5.6.1.1 On the basis of the assessment completed at the plan level, the options in the WRMP24 Plan B are considered to be compliant with WFD objectives. Given that this assessment is at a strategic plan level the scoring of WFD risks has been undertaken based on reasonable professional judgment at this stage.

5.6.1.2 Detailed investigations and generic and good practice mitigation measures have been clearly set out in the assessment for each option, and the conclusions on WFD compliance of the options at a plan level assume these investigations will have been concluded and sufficient mitigation will be in place.

5.6.1.3 More detailed WFD assessments will need to be undertaken at the project-level design development stage, prior to and as part of application for consent.

5.6.1.4 Areas for future focus for any options carried forward include:

- Consultation with the Environment Agency to present and discuss key WFD risks and proposed approach to improving certainty of assessments.
- Collation and review of Heavily Modified Water Body (HMWB) measures information from the Environment Agency for inclusion into the assessment of potential impediment to obtaining Good Ecological Potential (GEP).
- Collation and review of detailed baseline data concerning WFD biological, physico-chemical and hydromorphological elements identified as being at yellow, amber, or red risk in the Level 2 assessments. This may include existing Environment Agency and Anglian Water long term WFD and water quality monitoring data within the relevant water bodies, and targeted baseline surveys being undertaken specifically for the option assessments.

- Further development of conceptual models linking together how potential hydrological changes (from abstractions or discharges) could influence water quality and the sensitivity of aquatic communities to those changes. This will include systems map of linkages between abstraction impacts and the direct and indirect effects on physico-chemical and biological WFD status elements, indicating thresholds of WFD classes or tolerance to change. This step would aid consultation and discussion with stakeholders and the requirement for/scoping of any detailed modelling.
- Investigations into the impact of new abstractions or discharges on both the water bodies where the activities take place and downstream water bodies.
- Further development of the design and operation of the options.
- Update to WFD assessments to incorporate additional information.
- Assessment of the combined potential WFD effects/risks of inter-reliant multiple options.

A. Summary of Level 1 assessments

A.1 Ruthamford South to Cambridge Water potable transfer (50Ml/d) (CAM4)

The Level 1 WFD assessment covered five water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option, as the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.1: WFD Level 1 assessment outcomes for CAM4

Option ID	CAM4
Option Description	Ruthamford South to Cambridge Water potable transfer (50Ml/d)
Number of water bodies passing WFD assessment	5
Water bodies passing WFD assessment	GB105033043310: Diddington Brook; GB105033042790: Alconbury and Brampton Brooks; GB105033047921: Ouse (Roxton to Earith); GB105033042730: West Brook; GB105033042740: Fen Drayton Drain
Number of water bodies requiring further WFD assessment	0

A.2 Lincolnshire East to Lincolnshire Central potable transfer (29Ml/d) (LNC25)

The Level 1 WFD assessment covered seven water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.2: WFD Level 1 assessment outcomes for LNC25

Option ID	LNC25
Option Description	Lincolnshire East to Lincolnshire Central potable transfer (29Ml/d)
Number of water bodies passing WFD assessment	7
Water bodies passing WFD assessment	GB104029067530: Laceby Beck / River Freshney Catchment (to N Sea); GB104029067540: Mawnbridge Drain; GB104029067575: North Beck Drain; GB104029067655: Skitter Beck / East Halton Beck; GB104029067605: Barrow Beck; GB104029067520: Ancholme from Bishopbridge to the Humber; GB40401G401500: North Lincolnshire Chalk Unit
Number of water bodies requiring further WFD assessment	0

A.3 Essex South to Essex Central Potable Water Transfer (10Ml/d) (EXC3)

The Level 1 WFD assessment covered four water bodies associated with the option. The outcomes indicated no further assessments would be necessary for the option because the types of activities do not present a risk to WFD status.

Table A.3: WFD Level 1 assessment outcomes for EXC3

Option ID	EXC3
Option Description	Essex South to Essex Central Potable Water Transfer (10Ml/d)
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB105037041330: Colne (d/s Doe's Corner); GB105037041150: Bourne Brook; GB105037041160: Blackwater (Combined Essex); GB40503G000400: Essex Gravels
Number of water bodies requiring further WFD assessment	0

A.4 Backwash water recovery, Essex Central WTW (0.3Ml/d) (EXC7)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.4: WFD Level 1 assessment outcomes for EXC7

Option ID	EXC7
Option Description	Backwash water recovery, Essex Central WTW (0.3Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105037041260: Colne (Gt. Yeldham - Doe's Corner) GB40503G000400: Essex Gravels
Number of water bodies requiring further WFD assessment	0

A.5 Backwash water recovery, Fenland WTW (0.2Ml/d) (FND26)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.5: WFD Level 1 assessment outcomes for FND26

Option ID	FND26
Option Description	Backwash water recovery, Fenland WTW (0.2Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105033047620: Babingley River; GB40501G400200: North West Norfolk Chalk
Number of water bodies requiring further WFD assessment	0

A.6 Marham abstraction (7.9Ml/d up to 2039, 12.3Ml/d after 2039) (FND22)

The Level 1 WFD assessment covered seven water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for one river water body: GB105033047792: Nar downstream of Abbey Farm.

Table A.6: WFD Level 1 assessment outcomes for FND22

Option ID	FND22
Option Description	Marham abstraction (7.9Ml/d up to 2039 ,12.3Ml/d after 2039)
Number of water bodies passing WFD assessment	6
Water bodies passing WFD assessment	GB105033047770: Country Drain; GB105033047670: Middleton Stop Drain; GB105033047791: Nar upstream of Abbey Farm; GB105033047662: Polver Drain; GB40501G400400: North West Norfolk Sandringham Sands (GW); GB40501G400200: North West Norfolk Chalk (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB105033047792: Nar downstream of Abbey Farm

A.7 Lincolnshire Central WTW Upgrade (3.2Ml/d) (LNC30)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that further assessments would be necessary for one water body: GB104028058480: Trent from Carlton-on-Trent to Laughton Drain.

Table A.7: WFD Level 1 assessment outcomes for LNC30

Option ID	LNC30
Option Description	Lincolnshire Central WTW Upgrade (3.2Ml/d)
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40402G990300: Lower Trent Erewash - Secondary Combined;
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB104028058480: Trent from Carlton-on-Trent to Laughton Drain

A.8 Lincolnshire East Groundwater (7.5Ml/d) (LNE11)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated further assessment would be necessary for one water body; GB40401G401500: North Lincolnshire Chalk Unit groundwater body.

Table A.8: WFD Level 1 assessment outcomes for LNE11

Option ID	LNE11
Option Description	Lincolnshire East Groundwater (7.5Ml/d)
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB104029067575: North Beck Drain
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB40401G401500: North Lincolnshire Chalk Unit

A.9 Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039) (LNE12)

The Level 1 WFD assessment covered five water bodies associated with the option. The outcomes indicated further assessment would be necessary for two water bodies;

GB104029061990: Louth Canal water body and GB30432209: Covenham Reservoir water body.

Table A.9: WFD Level 1 assessment outcomes for LNE12

Option ID	LNE12
Option Description	Lincolnshire East Surface Water (13Ml/d before 2039, 7.3Ml/d after 2039)
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB40401G401500: North Lincolnshire Chalk Unit (GW); GB104029062010: Poulton Drain Catchment (trib of Louth Canal) GB105029061660: Great Eau (downstream of South Thoresby)
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further assessment	GB104029061990: Louth Canal; GB30432209: Covenham Reservoir

A.10 Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d) (LNN3)

The Level 1 WFD assessment covered three water bodies associated with the option. The outcomes indicated further assessment would be necessary for one water body; GB40402G990300: Lower Trent Erewash - Secondary Combined groundwater body.

Table A.10: WFD Level 1 assessment outcomes for LNN3

Option ID	LNN3
Option Description	Lincolnshire Retford and Gainsborough WTW Upgrade (0.72Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB104028058120: Laughton Drain Catchment (trib of Trent); GB104028058480: Trent from Carlton-on-Trent to Laughton Drain
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB40402G990300: Lower Trent Erewash - Secondary Combined

A.11 Norwich and the Broads to Aylsham potable transfer (3Ml/d) (NAY1)

The Level 1 WFD assessment covered four water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.11: WFD Level 1 assessment outcomes for NAY1

Option ID	NAY1
Option Description	Norwich and the Broads to Aylsham potable transfer (3Ml/d)
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB105034050932: Bure (Scarrow Beck to Horstead Mill) GB105034055730: King's Beck GB105034050931: Bure (Horstead Mill to St Benet's Abbey) GB40501G400300: Broadland Rivers Chalk & Crag

Option ID	NAY1
Number of water bodies requiring further WFD assessment	0

A.12 Fenland to Norfolk Bradenham potable transfer (50Ml/d) (NBR6)

The Level 1 WFD assessment covered nine water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.12: WFD Level 1 assessment outcomes for NBR6

Option ID	NBR6
Option Description	Fenland to Norfolk Bradenham potable transfer (50Ml/d)
Number of water bodies passing WFD assessment	9
Water bodies passing WFD assessment	GB205033047665: Relief Channel; GB205033000040: Cut-off Channel; GB105033047810: Stringside Stream; GB105033047820: Old Carr Stream; GB105033047880: Gadder; GB105033047890: Wissey - Upper; GB40501G400400: North west Norfolk Sandringham Sands; GB40501G445700: Cam and Ely Ouse Woburn Sands; GB40501G400500: Cam and Ely Ouse Chalk
Number of water bodies requiring further WFD assessment	0

A.13 Suffolk Thetford to Norfolk East Harling potable transfer (5Ml/d) (NEH3)

The Level 1 WFD assessment covered four water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.13: WFD Level 1 assessment outcomes for NEH3

Option ID	NEH3
Option Description	Suffolk Thetford to Norfolk East Harling potable transfer (5Ml/d)
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB105033043400: Little Ouse River; GB105033043190: Thet (DS Swangey Fen); GB105033043390: Whittle; GB40501G400500: Cam and Ely Ouse Chalk
Number of water bodies requiring further WFD assessment	0

A.14 Norfolk East Harling to Norfolk Harleston potable transfer (5Ml/d) (NHL4)

The Level 1 WFD assessment covered nine water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for one groundwater body: GB40501G400300: Broadland Rivers Chalk & Crag.

Table A.14: WFD Level 1 assessment outcomes for NHL4

Option ID	NHL4
Option Description	Norfolk East Harling to Norfolk Harleston potable transfer (5Ml/d)
Number of water bodies passing WFD assessment	8
Water bodies passing WFD assessment	GB105033043190: Thet (DS Swangey Fen) GB105033043390: Whittle GB105034045820: Waveney (u/s Frenze Beck); GB105034045840: Frenze Beck; GB105034045850: Dickleburgh Stream; GB105034045901: Waveney (R Dove - Starston Brook); GB105034045880: Starston Brook (GW); GB40501G400500: Cam and Ely Ouse Chalk (GW)
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further assessment	GB40501G400300: Broadland Rivers Chalk and Crag

A.15 Norfolk Bradenham to Norwich and the Broads potable transfer (20Ml/d) (NTB10)

The Level 1 WFD assessment covered 12 water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for one groundwater body: GB40501G400300: Broadland Rivers Chalk & Crag (GW).

Table A.15: WFD Level 1 assessment outcomes for NTB10

Option ID	NTB10
Option Description	Norfolk Bradenham to Norwich and the Broads potable transfer (20Ml/d)
Number of water bodies passing WFD assessment	11
Water bodies passing WFD assessment	GB105033047890: Wissey - Upper; GB105034051020: Wendling Beck; GB105034051000: Tud; GB105034055881: Wensum US Norwich; GB105034050970: Spixworth (and Dobbs) Beck; GB105034050931: Bure (Horstead Mill to St Benet's Abbey); GB105034051190: Chet; GB105034051210: Hellington Beck; GB105034051370: Yare (Wensum to tidal); GB510503410700: BURE & WAVENEY & YARE & LOTHING; GB40501G400500: Cam and Ely Ouse Chalk
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB40501G400300: Broadland Rivers Chalk & Crag (GW)

A.16 Ruthamford South Drought permit (2.07Ml/d) (RTS16)

The WFD assessment for this option was undertaken under the Anglian Water Drought Plan 2022. A summary of the results of this assessment are set out below. The assessment covered two water bodies for this option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for both river water bodies: GB105033047921: Ouse (Roxton to Earith) and GB205033000060 Old Bedford River / River Delph (inc The Hundred Foot Washes).

Table A.16: WFD Level 1 assessment outcomes for RTS16

Option ID	RTS16
Option Description	Ruthamford South Drought permit (2.07Ml/d)
Number of water bodies passing WFD assessment	0
Water bodies passing WFD assessment	-
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further WFD assessment	GB105033047921: Ouse (Roxton to Earith) GB205033000060: Old Bedford River / River Delph (inc The Hundred Foot Washes)

A.17 Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040) (RTS21)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated further assessment would be necessary for one water body; GB105033047923: Ouse (Newport Pagnell to Roxton) river water body.

Table A.17: WFD Level 1 assessment outcomes for RTS21

Option ID	RTS21
Option Description	Ruthamford South surface water enhancement (9.5Ml/d up to 2040, 6Ml/d after 2040)
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40501G445600: Upper Bedford Ouse Principal Oolite 2
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further assessment	GB105033047923: Ouse (Newport Pagnell to Roxton)

A.18 Suffolk East WTW Upgrade (1.7Ml/d) (SUE23)

The Level 1 WFD assessment covered three water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.18: WFD Level 1 assessment outcomes for SUE23

Option ID	SUE23
Option Description	Suffolk East WTW Upgrade (1.7Ml/d)
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB105036040930: Brett; GB40503G000400: Essex Gravels; GB40502G400900: North Essex Lower London Tertiaries
Number of water bodies requiring further WFD assessment	0

A.19 Cambs and West Suffolk to East Suffolk potable transfer (5Ml/d) (SUE24)

The Level 1 WFD assessment covered four water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.19: WFD Level 1 assessment outcomes for SUE24

Option ID	SUE24
Option Description	Cambs and West Suffolk to East Suffolk potable transfer (5Ml/d)
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB105036040941: Stour (Wixoe – Lamarsh); GB105036040942: Stour (Lamarsh - R. Brett); GB40501G400700: North Essex Chalk; GB40503G000400: Essex Gravels
Number of water bodies requiring further WFD assessment	0

A.20 Backwash recovery at Barnham Cross (discharge reduction of 0.05Ml/d) (SUT6)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option, as the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.20: WFD Level 1 assessment outcomes for SUT6

Option ID	SUT6
Option Description	Backwash recovery at Barnham Cross (discharge reduction of 0.05Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105033043090: Little Ouse (Sapiston Confluence to Nuns' Br) GB40501G400500: Cam and Ely Ouse Chalk
Number of water bodies requiring further WFD assessment	0
Water bodies requiring further WFD assessment	N/A

A.21 Cambridge to Suffolk West Cambs Potable Water Transfer (50Ml/d) (SWC8)

The Level 1 WFD assessment covered 15 water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option, as the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.21: WFD Level 1 assessment outcomes for SWC8

Option ID	SWC8
Option Description	Cambridge to Suffolk West Cambs Potable Water Transfer (50Ml/d)
Number of water bodies passing WFD assessment	15
Water bodies passing WFD assessment	GB105033042740: Fen Drayton Drain; GB105033042770: Swavesey Drain; GB205033043375: Old West River; GB105033042750: Cam; GB105033042700: Bottisham Lode - Quy Water; GB105033042710: Swaffham - Bulbeck Lode; GB105033042780: New River; GB105033042860: Soham Lode; GB105033042990: Kennett-Lee Brook; GB105036046400: Glem - Upper; GB105036040970: Glem - Lower;

	GB105036040990: Chad Brook; GB40501G445700: Cam and Ely Ouse Woburn Sands; GB40501G400500: Cam and Ely Ouse Chalk; GB40501G400700: North Essex Chalk
Number of water bodies requiring further WFD assessment	0

A.22 Suffolk West & Cambs groundwater relocation (2.6Ml/d) (SWC13)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated further assessment would be necessary for one water body; GB40501G400700: North Essex Chalk groundwater body.

Table A.22: WFD Level 1 assessment outcomes for SWC13

Option ID	SWC13
Option Description	Suffolk West & Cambs groundwater relocation (2.6Ml/d)
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB105036040980: Stour (u/s Wixoe)
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB40501G400700: North Essex Chalk

A.23 Backwash water recovery, Essex South WTW (0.3Ml/d) (EXS7)

The Level 1 WFD assessment covered three water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.23: WFD Level 1 assessment outcomes for EXS7

Option ID	EXS7
Option Description	Backwash water recovery, Essex South WTW (0.3Ml/d)
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB105036040942: Stour (Lamarsh - R. Brett); GB105037041330:Colne (d/s Doe's Corner); GB40503G000400:Essex Gravels
Number of water bodies requiring further WFD assessment	0

A.24 Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d) (NBR9)

The Level 1 WFD assessment covered three water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.24: WFD Level 1 assessment outcomes for NBR9

Option ID	NBR9
Option Description	Backwash water recovery, Norfolk Bradenham WTW (0.2Ml/d)
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB105033047890: Wissey - Upper;

Option ID	NBR9
	GB105034051020: Wendling Beck; GB40501G400500: Cam and Ely Ouse Chalk
Number of water bodies requiring further WFD assessment	0

A.25 North Norfolk Coast WTW backwash water recovery (0.18Ml/d) (NNC5)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.25: WFD Level 1 assessment outcomes for NNC5

Option ID	NNC5
Option Description	North Norfolk Coast WTW backwash water recovery (0.18Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105034055740: Scarrow Beck GB40501G400300: Broadland Rivers Chalk & Crag (GW)
Number of water bodies requiring further WFD assessment	0

A.26 North Norfolk Coast WTW backwash water recovery (0.2Ml/d) (NNC6)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for one groundwater body: GB40501G400100: North Norfolk Chalk.

Table A.26: WFD Level 1 assessment outcomes for NNC6

Option ID	NNC6
Option Description	North Norfolk Coast WTW backwash water recovery (0.2Ml/d)
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB650503520003: Norfolk East
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB40501G400100: North Norfolk Chalk (GW)

A.27 Backwash water recovery, Lincolnshire East WTW (1.3Ml/d) (LNE3)

The Level 1 WFD assessment covered three water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.27: WFD Level 1 assessment outcomes for LNE3

Option ID	LNE3
Option Description	Backwash water recovery, Lincolnshire East WTW (1.3Ml/d)
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB104029062010: Poulton Drain Catchment (trib of Louth Canal) GB104029061990: Louth Canal

Option ID	LNE3
	GB40401G401500: North Lincolnshire Chalk Unit (GW)
Number of water bodies requiring further WFD assessment	0

A.28 Backwash water recovery, Norfolk Aylsham WTW (0.75Ml/d) (NAY4)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.28: WFD Level 1 assessment outcomes for NAY4

Option ID	NAY4
Option Description	Backwash water recovery, Norfolk Aylsham WTW (0.75Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB40501G400300: Broadland Rivers Chalk & Crag; GB105034050932: Bure (Scarrow Beck to Horstead Mill)
Number of water bodies requiring further WFD assessment	0

A.29 Backwash water recovery, Norfolk East Dereham WTW (0.1Ml/d) (NED3)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.29: WFD Level 1 assessment outcomes for NED3

Option ID	NED3
Option Description	Backwash water recovery, Norfolk East Dereham WTW (0.1Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105034051020: Wendling Beck GB40501G400300: Broadland Rivers Chalk & Crag (GW)
Number of water bodies requiring further WFD assessment	0

A.30 Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d) (NHL7)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status to one water body: GB105034045850: Dickleburgh Stream river water body.

Table A.30: WFD Level 1 assessment outcomes for NHL7

Option ID	NHL7
Option Description	Backwash water recovery, Norfolk Harleston WTW (0.2Ml/d)
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB40501G400300: Broadland Rivers Chalk & Crag
Number of water bodies requiring further WFD assessment	1

Option ID	NHL7
Water bodies requiring further WFD assessment	GB105034045850: Dickleburgh Stream

A.31 Backwash water recovery, Norfolk Aylsham WTW (0.1Ml/d) (NAY5)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.31: WFD Level 1 assessment outcomes for NAY5

Option ID	NAY5
Option Description	Backwash water recovery, Norfolk Aylsham WTW (0.1Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105034055710: North Walsham and Dilham Canal (disused) GB40501G400300: Broadland Rivers Chalk & Crag (GW)
Number of water bodies requiring further WFD assessment	0

A.32 Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4Ml/d up to 2039, 13.9Ml/d after 2039) (EXS19)

The Level 1 WFD assessment covered six water bodies associated with the option. The outcomes indicated further assessment would be necessary for the option because the types of activities present a risk to WFD status for two water bodies; GB520503713800: Colne transitional water body. and GB40503G000400: Essex Gravels groundwater body.

Table A.32: WFD Level 1 assessment outcomes for EXS19

Option ID	EXS19
Option Description	Colchester Reuse direct to Ardleigh Reservoir (no additional treatment) (11.4Ml/d up to 2039, 13.9Ml/d after 2039)
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB105037041320: Salary Brook; GB105036041000: Stour (d/s R. Brett); GB105037041330: Colne (d/s Doe's Corner GB30539944: Ardleigh Reservoir;
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further assessment	GB520503713800: Colne; GB40503G000400: Essex Gravels

A.33 Norfolk Bradenham to Suffolk Thetford (15Ml/d) (SUT5)

The Level 1 WFD assessment covered eight water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.33: WFD Level 1 assessment outcomes for SUT5

Option ID	SUT5
Option Description	Norfolk Bradenham to Suffolk Thetford (15Ml/d)

Number of water bodies passing WFD assessment	8
Water bodies passing WFD assessment	GB105033047890: Wissey - Upper; GB105034051260: Blackwater (Yare); GB105033047870: Watton Brook; GB105033047860: Stow Bedon Stream; GB105033043420: Larling Brook; GB105033043190: Thet (DS Swangey Fen); GB105033043400: Little Ouse River; GB40501G400500: Cam and Ely Ouse Chalk
Number of water bodies requiring further WFD assessment	0

A.34 Backwash water recovery, Suffolk East WTW (0.17Ml/d) (SUE25)

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.34: WFD Level 1 assessment outcomes for SUE25

Option ID	SUE25
Option Description	Backwash water recovery, Suffolk East WTW (0.17Ml/d)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB40501G400600: Waveney and East Suffolk Chalk & Crag; GB105035046280: Gipping (d/s Stowmarket)
Number of water bodies requiring further WFD assessment	0

A.35 Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3Ml/d) (LNN1)

The Level 1 WFD assessment covered ten water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.35: WFD Level 1 assessment outcomes for LLN1

Option ID	LLN1
Option Description	Lincolnshire Central to Lincolnshire Retford and Gainsborough potable transfer (3.5Ml/d)
Number of water bodies passing WFD assessment	10
Water bodies passing WFD assessment	GB104029061850:Ancholme from Source to Bishopbridge; GB104029061890:Black Dyke (trib of Ancholme); GB104028057970:Eau from Source to Northorpe Beck; GB105030062411: River Till; GB104028058120:Laughton Drain Catchment (trib of Trent); GB40402G990300:Lower Trent Erewash - Secondary Combined; GB40502G401400:Witham Lias; GB40401G444600:Grimsby Ancholme Louth Limestone Unit; GB40401G444500:Blisworth Limestone Rutland formation; GB40402G444700:Cornbrash.
Number of water bodies requiring further WFD assessment	0

A.36 Norfolk Bradenham to Norfolk East Dereham potable transfer (10Ml/d) (NED2)

The Level 1 WFD assessment covered four water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for one groundwater body: GB40501G400300: Broadland Rivers Chalk & Crag.

Table A.36: WFD Level 1 assessment outcomes for NED2

Option ID	NED2
Option Description	Norfolk Bradenham to Norfolk East Dereham potable transfer (10Ml/d)
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB105033047890: Wissey - Upper; GB105034051020: Wendling Beck; GB40501G400500: Cam and Ely Ouse Chalk
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB40501G400300: Broadland Rivers Chalk & Crag

A.37 Norfolk East Dereham to North Norfolk Coast potable transfer (10Ml/d) (NNC4)

The Level 1 WFD assessment covered eight water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for one groundwater body: GB40501G400300: Broadland Rivers Chalk & Crag.

Table A.37: WFD Level 1 assessment outcomes for NNC4

Option ID	NNC4
Option Description	Norfolk East Dereham to North Norfolk Coast potable transfer (10Ml/d)
Number of water bodies passing WFD assessment	7
Water bodies passing WFD assessment	GB105034051020: Wendling Beck; GB105034051050: Blackwater (Wendling Beck); GB105034055881: Wensum US Norwich; GB105034055860: Little Ryburgh Tributary; GB105034055840: Stiffkey; GB105034055770: Gunthorpe Stream; GB40501G400100: North Norfolk Chalk
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB40501G400300: Broadland Rivers Chalk & Crag

A.38 South Humber Bank Non-potable desalination (60Ml/d) (SHB9)

The Level 1 WFD assessment covered ten water bodies associated with the option. The outcomes indicated that two further assessments would be necessary for the GB640402492000: Lincolnshire coastal water body and GB40501G401600: South Lincolnshire Chalk Unit groundwater body.

Table A.38: WFD Level 1 assessment outcomes for SHB9

Option ID	SHB9
Option Description	South Humber Bank Non-potable desalination (60Ml/d)

Option ID	SHB9
Number of water bodies passing WFD assessment	8
Water bodies passing WFD assessment	GB105029061641: Trusthorpe Pump Drain; GB105029061660: Great Eau (downstream of South Thoresby); GB105029061670: Long Eau; GB105029061680: South Dike and Grayfleet Drain; GB104029062150: Seven Towns South Eau; GB104029061990: Louth Canal; GB104029062010: Poulton Drain Catchment (trib of Louth Canal); GB40401G401500: North Lincolnshire Chalk Unit
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further WFD assessment	GB640402492000: Lincolnshire; GB40501G401600: South Lincolnshire Chalk Unit (GW)

A.39 Fens Reservoir 50 MCM (usable volume) (44.4Ml/d) (FND29)

The WFD assessment for this SRO was undertaken as part of the wider Fens Reservoir SRO project. A summary of the Level 1 finding is presented below.

The Level 1 WFD assessment covered 11 water bodies associated with the option. The outcomes indicated further assessment would be necessary for all of these water bodies except GB205032050385: North Level Pumped Areas 2 and 3.

Table A.39: WFD Level 1 assessment outcomes for FND29

Option ID	FND29
Option Description	Fens Reservoir 50MCM (usable volume) (44.4Ml/d)
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB205032050385: North Level Pumped Areas 2 and 3
Number of water bodies requiring further WFD assessment	10
Water bodies requiring further assessment	GB530503300300: Great Ouse GB205033000050: Middle Level GB205033000010: Counter Drain (Sutton and Mepal IDB incl. Cranbrook Drain); GB205033000020: Counter Drain (Manea and Welney IDB); GB205033000060: Old Bedford River / River Delph (including The Hundred Foot Washes) GB205033000030: Counter Drain (Upwell and Outwell IDB); GB530503311300: Wash Inner GB105032050381: Nene – Islip to tidal; GB530503200200: Nene GB105032050382: Mortons Leam

A.40 Holland on Sea desalination (seawater) 26Ml/d (EXS10)

The Level 1 WFD assessment covered eight water bodies associated with the option. The outcomes indicated further assessment would be necessary for two water bodies; GB650503520001: Essex coastal water body and GB40503G000400: Essex Gravels groundwater body.

Table A.40: WFD Level 1 assessment outcomes for EXS10

Option ID	EXS10
Option Description	Holland on Sea desalination (seawater) 26Ml/d
Number of water bodies passing WFD assessment	6
Water bodies passing WFD assessment	GB105037077810: Holland Brook; GB520503713800: COLNE; GB105037041310: Tenpenny Brook; GB105037041320: Salary Brook; GB105036041000: Stour (d/s R. Brett); GB105037041330: Colne (d/s Doe's Corner)
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further assessment	GB650503520001: Essex GB40503G000400: Essex Gravels

A.41 Ruthamford North to Bourne potable transfer (20Ml/d) (LNB1)

The Level 1 WFD assessment covered six water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.41: WFD Level 1 assessment outcomes for LNB1

Option ID	LNB1
Option Description	Ruthamford North to Bourne potable transfer (20Ml/d)
Number of water bodies passing WFD assessment	6
Water bodies passing WFD assessment	GB105031050595: Brook Drain (including Marholm Brook); GB205031050595: Maxey Cut; GB105031050600: Welland - conf Gwash to conf Greatford Cut; GB205031050685: Welland - conf Greatford Cut to tidal; GB205031050705: Vernatt's Drain; GB105031050720: Glen.
Number of water bodies requiring further WFD assessment	0

A.42 Ruthamford North to Lincolnshire Central potable transfer (20Ml/d) (LNC16)

The Level 1 WFD assessment covered 18 water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.42: WFD Level 1 assessment outcomes for LNC16

Option ID	LNC16
Option Description	Ruthamford North to Lincolnshire Central potable transfer (20Mld/).
Number of water bodies passing WFD assessment	18
Water bodies passing WFD assessment	GB105030062415: Branston Beck; GB105030056230: Dunston Beck; GB105030056210: Metheringham Beck; GB105030056175: Dorrington Dike; GB105030056700: Ruskington Beck;

Option ID	LNC16
	GB105030056670: Slea; GB105030056520: South Beck; GB10503105540: East Glen River; GB105031050720: Glen; GB205031050705: Vernatt's Drain; GB205031050595: Maxey Cut; GB1050310595: Brook Drain (including Marholm Brook); GB40501G444800: Witham Limestone Unit A; GB205031050685: Welland – conf Greatford Cut to tidal; GB105031050600: Welland – conf Gwash to conf Greatford Cut; GB40501G444900: Blisworth Limestone Rutland formation – Anglian; GB40501G445100: Witham Limestone Unit B; GB40501G445300: Welland Mid Jurassic Unit
Number of water bodies requiring further WFD assessment	0

A.43 Bulk trade agreement – River Trent (7Ml/d) (LNC28)

The Level 1 WFD assessment covered nine water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.43: WFD Level 1 assessment outcomes for LNC28

Option ID	LNC28
Option Description	Bulk trade agreement – River Trent (7Ml/d)
Number of water bodies passing WFD assessment	9
Water bodies passing WFD assessment	GB104028053420: Pingley/Rundell Dyke Catch Upper (trib of Trent); GB104028053410: Greet Catchment (trib of Trent); GB104028053390: Trent Bifurcation Pingley Dyke to Winthorpe; GB104028053440: The Beck Catchment (trib of Trent); GB104028058480: Trent from Carlton-on-Trent to Laughton Drain; GB104028058270: Goosemoor Dyke from Moorhouse Beck to River Trent; GB105030062390: Skellingthorpe Main Drain; GB40402G990300: Lower Trent Erewash - Secondary Combined GB104028053110: Trent from Soar to The Beck.
Number of water bodies requiring further WFD assessment	0

A.44 Mablethorpe Desalination Seawater (50Ml/d) (LNE6)

The Level 1 WFD assessment covered ten water bodies associated with the option. The outcomes indicated further assessment would be necessary for two water bodies; GB640402492000: Lincolnshire coastal water body and GB40501G401600: South Lincolnshire Chalk Unit groundwater body.

Table A.44: WFD Level 1 assessment outcomes for LNE6

Option ID	LNE6
Option Description	Mablethorpe desalination seawater (50Ml/d)
Number of water bodies passing WFD assessment	8

Water bodies passing WFD assessment	GB105029061640: Trusthorpe Pump Drain (upper end); GB105029061660: Great Eau (downstream of South Thoresby); GB105029061670: Long Eau; GB105029061680: South Dike and Grayfleet Drain; GB104029062150: Seven Towns South Eau; GB104029061990: Louth Canal; GB104029062010: Poulton Drain Catchment (trib of Louth Canal); GB40401G401500: North Lincolnshire Chalk Unit
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further assessment	GB640402492000: Lincolnshire; GB40501G401600: South Lincolnshire Chalk Unit

A.45 Bacton desalination (seawater) (25Ml/d) (NTB17)

The Level 1 WFD assessment covered ten water bodies associated with the option. The outcomes indicated that one further assessment would be necessary for the GB650503520003: Norfolk East coastal water body.

Table A.45: WFD Level 1 assessment outcomes for NTB17

Option ID	NTB17
Option Description	Bacton desalination (seawater) (25Ml/d)
Number of water bodies passing WFD assessment	9
Water bodies passing WFD assessment	GB105034055670: East Ruston Stream; GB105034055710: North Walsham and Dilham Canal (disused); GB105034050890: Smallburgh Watercourse; GB105034051330: Ant (Dilham to R. Bure); GB105034050931: Bure (Horstead Mill to St Benet's Abbey); GB105034051310: Witton Run; GB105034051370: Yare (Wensum to tidal); GB105034055882: Wensum DS Norwich; GB40501G400300: Broadland Rivers Chalk & Crag
Number of water bodies requiring further WFD assessment	1
Water bodies requiring further WFD assessment	GB650503520003: Norfolk East

A.46 Norwich and the Broads to Norfolk Wymondham potable transfer (5Ml/d) (NWY1)

The Level 1 WFD assessment covered four water bodies associated with the option. The outcomes indicated no further assessments would be necessary for the option because the types of activities do not present a risk to WFD status.

Table A.46: WFD Level 1 assessment outcomes for NWY1

Option ID	NWY1
Option Description	Norwich and the Broads to Norfolk Wymondham potable transfer (5Ml/d).
Number of water bodies passing WFD assessment	4
Water bodies passing WFD assessment	GB105034051281: Yare (Tiffey to Wensum); GB105034051282: Tiffey;

Option ID	NWY1
	GB105034051180: Tiffey (u/s Wymondham STW); GB40501G400300: Broadland Rivers Chalk & Crag
Number of water bodies requiring further WFD assessment	0

A.47 Ruthamford North to Ruthamford North potable transfer (75Ml/d) (RNT30)

The Level 1 WFD assessment covered five water bodies associated with the option. The outcomes indicated that further assessment would be necessary for the option because the types of activities present a risk to WFD status for two groundwater body: GB40502G402400: Nene Mid Lower Jurassic Unit and GB40501G445500: Northampton Sands.

Table A.47: WFD Level 1 assessment outcomes for RNT30

Option ID	RNT30
Option Description	Ruthamford North to Ruthamford North potable transfer (75Ml/d)
Number of water bodies passing WFD assessment	3
Water bodies passing WFD assessment	GB105031050595: Brook Drain (including Marholm Brook); GB105032050381: Nene - Islip to tidal GB105032050330: Billing Brook
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further WFD assessment	GB40502G402400: Nene Mid Lower Jurassic Unit GB40501G445500: Northampton Sands

A.48 Ruthamford North to Ruthamford South potable transfer (75Ml/d) (RTS24)

The Level 1 WFD assessment covered ten water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.48: WFD Level 1 assessment outcomes for RTS24

Option ID	RTS24
Option Description	Ruthamford North to Ruthamford South potable transfer (75Ml/d)
Number of water bodies passing WFD assessment	10
Water bodies passing WFD assessment	GB105032050381: Nene - Islip to tidal; GB105032050330: Billing Brook; GB105032050340: Stanground Lode; GB205033000050: Middle Level; GB105033042820: Alconbury Brook; GB105033042810: Cock Brook; GB105033042870: Ellington Brook; GB105033042830: Ellington Brook (Trib[8]); GB105033043310: Diddington Brook; GB40502G402400: Nene Mid Lower Jurassic Unit
Number of water bodies requiring further WFD assessment	0

[8] The use of “trib” is used here as an abbreviation of tributary

A.49 Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d) (RTN17)

The WFD assessment for this SRO was undertaken as part of the wider Lincolnshire Reservoir SRO project. A summary of the Level 1 findings is presented below.

The Level 1 WFD assessment covered 23 water bodies associated with the option. The outcomes indicated further assessment would be necessary for seven water bodies; GB105030056520: South Beck river water body, GB105030056515: Swaton Drains river water body, GB104028053110: Trent from Soar to The Beck river water body, GB105030056780: Witham - conf Cringle Bk to conf Brant river water body, GB105030062370: Witham - conf Brant to conf Catchwater Drain river water body, GB205030062425: Witham - conf Catchwater Drain to conf Bain river water body and GB205030062426: Lower Witham - conf Bain to Grand Sluice river water body.

Table A.49: WFD Level 1 assessment outcomes for Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d) (RTN17)

Option ID	RTN17
Option Description	Lincolnshire Reservoir 50MCM (usable volume) (169Ml/d)
Number of water bodies passing WFD assessment	16
Water bodies passing WFD assessment	GB104028053111: Slough Dyke Catchment (trib of Trent); GB104028053430: The Fleet Upper Catchment (trib of Trent); GB205030051515: Black Sluice IDB draining to the South Forty Foot Drain; GB105030056490: Ousemere Lode; GB105030056480: Billingborough Lode; GB105030051555: Pointon Lode; GB105030051540: Old Beck; GB105031050720: Glen; GB205031050705: Vernatt's Drain; GB105031050600: Welland - conf [9]Gwash to conf Greatford Cut; GB205031050595: Maxey Cut; GB105031050595: Brook Drain (including Marholm Brook); GB205031050685: Welland - conf Greatford Cut to tidal; GB40502G445000: Cornbrash; GB40402G990300: Lower Trent Erewash - Secondary Combined; GB40502G401400: Witham Lias
Number of water bodies requiring further WFD assessment	7
Water bodies requiring further assessment	GB105030056520: South Beck GB105030056515: Swaton Drains GB104028053110: Trent from Soar to The Beck GB105030056780: Witham - conf Cringle Bk to conf Brant GB105030062370: Witham - conf Brant to conf Catchwater Drain GB205030062425: Witham - conf Catchwater Drain to conf Bain GB205030062426: Lower Witham – conf Bain to Grand Sluice

[9] The use of “conf” is used here as an abbreviation of confluence

A.50 Ruthamford South to Ruthamford Central potable transfer (20Ml/d) (RTC3)

The Level 1 WFD assessment covered the six water bodies associated with the option. The outcomes indicated no further assessment would be necessary for the option because the types of activities do not present a risk to WFD status or objectives for any water bodies.

Table A.50: WFD Level 1 assessment outcomes for RTC3

Option ID	RTC3
Option Description	Ruthamford South to Ruthamford Central potable transfer (20Ml/d)
Number of water bodies passing WFD assessment	6
Water bodies passing WFD assessment	GB105033037660: Running Waters-Steppingley; GB105033038010: Harrowden Brook; GB105033038050: Elstow Brook (US Shortstown); GB105033037930: Broughton Brook; GB105033037971: Ouzel US Caldecote Mill; GB40501G402200: Upper Bedford Ouse Woburn Sands
Number of water bodies requiring further WFD assessment	0

A.51 WINEP River Brett option

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities present no risk to WFD status. This is based on the assumption of no increase in licence at Raydon groundwater source.

Table A.51: WFD Level 1 assessment outcomes for WINEP River Brett

Option ID	WINEP River Brett
Option Description	River support to River Brett from the Raydon groundwater source
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105036040930: Brett; GB40501G400700: North Essex Chalk
Number of water bodies requiring further WFD assessment	0

A.52 WINEP River Colne option

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities present no risk to WFD status. This is based on the assumption of no increase in RA groundwater abstraction at Great Yeldham groundwater source.

Table A.52: WFD Level 1 assessment outcomes for WINEP River Colne

Option ID	WINEP River Colne
Option Description	River support to River Colne reach 1 from the Great Yeldham groundwater source and river restoration
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105037041260: Colne (Gt. Yeldham - Doe's Corner); GB40501G400700: North Essex Chalk

Option ID	WINEP River Colne
Number of water bodies requiring further WFD assessment	0

A.53 WINEP River Gipping

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities present no risk to WFD status.

Table A.53: WFD Level 1 assessment outcomes for WINEP River Gipping

Option ID	WINEP River Gipping
Option Description	River restoration works on River Gipping (reach 2 and 3)
Number of water bodies passing WFD assessment	2
Water bodies passing WFD assessment	GB105035046280: Gipping (d/s Stowmarket); GB40501G400600: Waveney and East Suffolk Chalk & Crag
Number of water bodies requiring further WFD assessment	0

A.54 WINEP Pant

The Level 1 WFD assessment covered three water bodies associated with the option. The outcomes indicated that further assessment would be necessary on two water bodies because the types of activities present no risk to WFD status. This is based on the assumption of an increase in RAA groundwater abstraction at Hawkspur Green groundwater source.

Table A.54: WFD Level 1 assessment outcomes for WINEP River Pant

Option ID	WINEP River Pant
Option Description	River support to River Pant from the Hawkspur Green groundwater source
Number of water bodies passing WFD assessment	1
Water bodies passing WFD assessment	GB105037041180: Pant
Number of water bodies requiring further WFD assessment	2
Water bodies requiring further WFD assessment	GB40502G400900: North Essex Lower London Tertiaries; GB40501G400700: North Essex Chalk

A.55 WINEP Stiffkey

The Level 1 WFD assessment covered two water bodies associated with the option. The outcomes indicated that no further assessment would be necessary for the option because the types of activities present no risk to WFD status. This is based on the assumption of no increase in RA groundwater abstraction at Houghton St Giles groundwater source.

Table A.55: WFD Level 1 assessment outcomes for WINEP River Stiffkey

Option ID	WINEP River Stiffkey
Option Description	River support to River Stiffkey from Houghton St Giles
Number of water bodies passing WFD assessment	2

Option ID	WINEP River Stiffkey
Water bodies passing WFD assessment	GB105034055840: Stiffkey; GB40501G400100: North Norfolk Chalk
Number of water bodies requiring further WFD assessment	0

B. Level 1 assessments

Available on request.

C. Level 2 assessments

Available on request.

D. Plan B WFD assessment tables

Available on request.

E. Cumulative effects with other projects assessment tables

Available on request.