



WRSE Regional Plan

Strategic Environmental Assessment Environmental Report

Appendix H – HRA Report

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1 Introduction

1.1 Overview

This is an appendix to the Strategic Environmental Assessment (SEA) Environmental Report for the Water Resources South East (WRSE) Draft Regional Plan. It presents the Habitats Regulations Assessment (HRA) which has been undertaken as part of the environmental assessment process to support the development of the WRSE Draft Regional Plan. This report should be read in conjunction with the individual water companies WRMP24 HRA Reports.

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

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

WRSE's aim is to secure the water supply for future generations through a collaborative, regional approach to managing water resources. To meet this aim WRSE is developing a multi-sector, regional resilience plan in order to secure reliable and resilient water supplies for the south east of England. The WRSE regional plan takes a long-term view to 2100 and provides a consistent framework for the development of the member water companies Water Resources Management Plans (WRMP) 2024. Further information on the description and context for the WRSE Regional plan can be found in Chapter 2 of the WRSE Draft Regional Plan SEA Environmental Report.

1.2 Habitats Regulations Assessment Requirements

The WRSE region contains numerous sites which fall under the UK's National Site Network (NSN) of European designated sites, as protected by the Conservation of Habitats and Species Regulations 2017 (as amended), known as the Habitats Regulations, i.e., Special Areas of Conservation (SAC) and Special Protection Areas (SPA). In addition to SACs and SPAs, Ramsar sites are also considered in the HRA.

To account for the UK having left the European Union, the Habitats Regulations were amended under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, with only relatively minor changes coming into force on 31 December 2020. The HRA regime set out in the Habitats Regulations therefore continues to apply in largely the same way since EU Exit. Examples of the relatively minor changes are that the European Commission's role in the HRA derogation test process has been replaced by the Secretary of State for the Environment, Food and Rural Affairs; and that there are changes to the procedures for designation / classification of SACs and SPAs.

Under Regulations 63 and 105 of the Habitats Regulations, a HRA is required to be undertaken on proposed plans or projects which are likely to have a significant effect on a designated site in the UK's

NSN either individually, or in combination with other plans and projects, that are not directly connected with, or necessary for the management of the site, to determine the implications for the site in view of its conservation objectives. As they are protected by government policy, the following sites require an HRA: proposed SACs, potential SPAs, Ramsar wetland sites of international importance (listed and proposed) and areas secured as sites compensating for damage to a Habitats Site. For ease of reference, sites which require an HRA assessment shall collectively be referred to as 'Habitats Sites' in this report, in line with the National Planning Policy Network (NPPF) definition of a Habitat Site as “...any site which would be included within the definition at Regulation 8 of the Conservation of Habitats and Species Regulations 2017 for the purpose of those regulations...”.

Regulation 9 of the Habitats Regulations requires every competent authority, in the exercise of any of its functions, to have regard to the requirements of the Habitats Directive. Regulation 10 places a duty on a competent authority, in exercising any function, to use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds. In addition, Regulation 63 places obligations on competent authorities in respect of plans or projects likely to have a significant effect on a protected site. Therefore, Water Companies have a statutory duty to prepare WRMPs and so they are the Competent Authority for HRAs of their WRMPs. Furthermore, Section 4.1 of the Water Resource Planning Guideline (WRPG) for England and Wales¹ stipulates that regional plans and Water Resources Management Plans (WRMPs) should be subject to a HRA as set out in the Habitats Regulations. As such, WRSE should meet the requirements of the Habitats Regulations before implementation.

This HRA Stage 1 Screening report identifies the options which have the potential to result in Likely Significant Effects (LSE) on sites which fall under the Habitats Regulations guidelines, and which would require a HRA Stage 2 Appropriate Assessment should they be brought forward in the preferred WRSE Regional Plan. Significantly, HRA is based on a rigorous application of the precautionary principle. Where LSE cannot be ruled out or uncertainty remains, an impact is assumed, triggering the requirement for Appropriate Assessment of that option.

1.3 Guidance

The EU Habitats Directive and the Habitats Regulations set the requirement for HRA but do not prescribe in which context and how HRA should be undertaken. Current best practice has been followed to ensure the options are assessed in a consistent manner, in accordance with the following guidelines:

- UK Water Industry Research (2021)². Environmental Assessment Guidance for Water Resources Management Plans and Drought Plans (21/WR/02/15).
- Court of Justice for the European Union's ruling on People Over Wind and Sweetman ('Sweetman II') vs Coillte Teoranta, Case C-323/17.
- UK Government (2019). Guidance on the use of Habitats Regulations Assessment.
- UK Government (2019). Conservation of Habitats and Species Regulations (Amendment) (EU Exit).
- Tyldesley, D. & Chapman, C. (2013). The Habitats Regulations Assessment Handbook, February 2021 edition UK: DTA Publications Limited.
- Environment Agency and Natural Resources Wales (2017). Water resources planning guideline – April 2017

¹ Available at [Water resources planning guideline - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/544441/water-resources-planning-guideline.pdf); updated on 2 July 2021, Environment Agency, Ofwat, Natural Resource Wales.

² We acknowledge that UKWIR 2012 guidance on HRA for WRMP is being updated. The latest version of this guidance will be referred to for the Appropriate Assessment stage of the WRSE HRA assessment.

- European Commission (2018). Managing Natura 2000 sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC. European Union, 1-86.
- Water Resource Planning Guidelines, 2021, Environment Agency, Ofwat, Natural Resources Wales and Supplementary Planning Guidance 'Environmental and Society in Decision-Making'.
- Appropriate Assessment - Guidance on the use of Habitats Regulations Assessment. Published 22 July 2019 (GOV.UK (2019))

2 Methodology

2.1 Approach to the WRSE HRA Assessment

Strictly, it is the draft WRMP that is the subject of formal HRA to ensure that legal requirements are met, according to (UK) Regulation 63(1) of the Habitats Regulations. It is therefore not a specific requirement to undertake and document HRA Screening of the entire feasible list of options prior to selection of the Regional Plan options. However, it is advised by UKWIR (2021) that HRA Screening be undertaken alongside the SEA, making use of the initial engineering design and environmental appraisal. It therefore provides a useful function in identifying potential requirements for mitigation and Appropriate Assessment early on, and as such it may help to inform the final selection of options for the Regional Plan.

The WRSE HRA follows a standard approach to strategic-level HRA assessments. For any plan or project that could affect one or more NSN Habitats Sites, the provisions of Part 6 of the Habitats Regulations establish the procedure that a competent national authority must follow before agreeing to the implementation of a plan or project on land or at sea within the Ecological Zone of Influence (Zoi) of the baseline.

The competent authority can only agree to the plan or project if, based on the findings of the appropriate assessment, it has demonstrated the absence (rather than the presence) of an adverse effect on the integrity of the Habitats Site concerned.

2.2 General HRA Process

HRA is an overarching term for all the different forms of assessment required by Article 6(3) and 6(4) of the Habitats Directive. It is a sequential and potentially iterative process that normally encompasses a step-by-step process which determines LSE and (where appropriate) assesses adverse impact on the integrity of a European site, examines alternative solutions, and provides justification of Imperative Reasons of Overriding Public Interest (IROPI). Previously, the process involved a four-stage process which assessed alternative solutions (where it cannot be ascertained that the proposal will not adversely affect the integrity of a European site) and IROPI (where no alternative solutions are identified) separately. More recent guidance such as the national guidance contained in 'Appropriate Assessment - Guidance on the use of Habitats Regulations Assessment. Published 22 July 2019' (GOV.UK (2019)) includes only three stages, as summarised below:

- HRA Stage 1 Screening³: screening for LSE.
- HRA Stage 2 Appropriate Assessment: of implications of identified LSEs on the conservation objectives of a Habitats Site to ascertain if the proposal will adversely affect the integrity of that site.
- HRA Stage 3 Derogation - to consider if proposals that would have an adverse effect on a European site qualify for an exemption.

³ While the term 'screening' is not used in the Habitats Directive or Regulations, EC and domestic guidance proposes a staged approach, the first stage of which is Screening. This is sometimes referred to a Test of Likely Significance. HRA Screening identifies whether a plan requires an Appropriate Assessment in the absence of mitigation. Therefore, this is the test for LSEs. The Screening process is based on objective information, rather than subjective opinion. Measures intended to mitigate impacts on Habitats Sites must be excluded from consideration during the Screening stage but can be considered at appropriate assessment stage

All three (previously four) stages of the process are referred to as the Habitats Regulations Assessment to clearly distinguish the whole process from the one step within it referred to as the “Appropriate Assessment”. Note that not all stages need be completed; if screening identifies that no LSE are predicted, then the process does not need to progress further. If LSE are identified, it may be that the Appropriate Assessment, exploring the LSE in more detail, can identify that there would be no adverse effects on integrity of the Habitats Site, then as above, the process can stop on completion of this stage.

2.3 The HRA Stage 1 Screening Process

The purpose of the HRA Stage 1 Screening stage was to determine which feasible options have the potential to result in any Likely Significant Effects on Habitats Sites in the National Site Network. The process identifies any viable impact pathway from an option to a Habitats Site and assesses the potential for those pathways to result in LSE on the sensitive receptors of that site.

Over 1,000 options were assessed as part of the HRA Stage 1 screening process, making use of the initial engineering design, environmental datasets and outcomes of previous environmental work undertaken. The screening assessments provide a high-level assessment of the potential for LSE (alone and in-combination). The results of the screening were used in the SEA and went into the investment model as sub-metrics for information. The screening results were provided to the individual water companies to take forward to HRA Appropriate Assessment where required as part of their WRMP24 development (if a conclusion of no LSE cannot be reached on the basis of high-level option-specific information, there will be a requirement for the option to be taken forward to Appropriate Assessment for a more detailed assessment).

This technical appendix does not present the individual screening assessments for each of the options which have been considered as part of the Draft Regional Plan. The assessment sheets for individual options are available on request from water companies through WRSE.

2.3.1 HRA Screening Principles

The following principles underpin this screening assessment:

- Screening is undertaken regardless of whether the WRSE options are located inside or outside the boundary of a Habitats Site.
- The term impact means an action ‘resulting in changes to an ecological feature’, and effect means an ‘outcome to an ecological feature from an impact’.
- The term Zone of Influence (Zoi) means ‘The area(s) over which ecological features may be affected by the biophysical changes caused by the proposed project and associated activities’.
- The Habitats Sites for inclusion in the HRA Screening assessment will be identified where the Zois of the WRSE options intersect with any Habitats Sites, irrespective of distance. The most pertinent examples of this are alterations to the water quality or quantity on watercourses, where even distant downstream Habitat Sites may be affected.
- In the context of the precautionary principle, an LSE exists when it cannot be excluded on the basis of objective information that the project will have a significant effect on the Habitats Site concerned and where the risk of a significant effect is “real” as opposed to hypothetical.
- The assessment of risk will be made in the light, inter alia, of the conservation objectives, characteristics and specific environmental conditions of the Habitat Site concerned.
- Mitigation measures intended to avoid or reduce the harmful effects are not considered when determining if an LSE exists.

- Any LSE identified through the application of the above principles will be taken forward and assessed in detail in an Appropriate Assessment if that option is taken forward to the Final Regional Plan.

2.3.2 Identification of NSN Habitats Sites for Assessment

The locations and boundaries of the NSN Habitats Sites in the WRSE region were mapped using the bespoke GIS platform developed to support the environmental and ecosystem services assessments of the regional plan, and publicly available data from Natural England. The GIS platform is designed around existing ESRI applications and software using ArcGIS dashboard and ArcGIS online.

A pathways and distance-based '10km threshold' approach has been used in determining the Habitats Sites in the ZoI of the Plan, based on the premise that most significant effects on qualifying species and habitats will occur within a maximum 10km radius of the source of impact, except where there are exceptional pathways such as major downstream or coastal dispersion effects, large transfers or damage/disruption to non-designated habitat that is functionally linked to a distant European Site UKWIR (2021).

2.3.3 Identifying a Zone of Influence and Potential Impacts

To determine the impact footprint in which an LSE may occur, specific buffer zones, or Zones of Influence (ZoIs) have been determined, which take into account various pathways by which an impact on a Habitats Site, or the habitats and species associated with these sites, might occur. The ZoIs and impact pathways are based on best practice advice from the Environment Agency and Natural England on previous WRMPs and Drought Plans and have taken a range of criteria into consideration, such as: the option type; movement of surface and groundwater; water volume, rate of flow, level of contaminants/pollutants, water chemistry for surface water pathways; mobilisation of dust, particles, nitrogen and other airborne contaminants during construction; alterations to abstraction regimes during operation. The General ZoI's defined for each option type is given in Table 2.1.

Table 2.1: Zones of Influence defined for each option type in the WRSE Plan

Option type		Zone of Influence
Aquifer storage and recovery		Where aquifer is in or partially in Habitats Site (assumes a neutral cycle and that aquifer would be recharged in winter)
Desalination		5km
Reservoirs	New reservoir	500m
	Increase capacity raising/dredging	500m
	Increase yield/intakes/improve efficiency	5km from source
Water (effluent) reuse from discharge		5km
Transfers	Construction of transfer	500m
	Changes in abstraction regime (new or altered abstractions)	Downstream to where watercourse enters estuarine or coastal waters

Although it is helpful to use this proximity basis to screen for LSE in many cases, there are uncertainties associated with using set distances as there are very few standards available as a guide to the reach of impact pathways, hence the use of the '10km threshold plus exceptional pathways' approach. Different

types of impacts can occur over different distances for example, and professional judgement has been used, and stated in the screening tables, on top of the set distances presented in Table 2.1, where appropriate during the screening and as stated in the option screening justification.

The qualifying habitats and species of Habitats Sites are vulnerable to a wide range of construction and operational impacts such as physical loss or damage of habitat, disturbance from noise, light, human presence, changes in hydrology (e.g. changes in water levels/flow, flooding), changes in water or air quality and biological disturbance (e.g. direct mortality, introduction of disease or non-native species). outlines a non-exhaustive summary of potential impacts, adapted from UKWIR (2021) guidance.

Table 2.2: Potential impacts for consideration in the HRA Screening Assessment

Broad categories of potential impacts on Habitats Sites (with examples)	Examples of activities resulting in impacts
Physical loss Removal Smothering Destruction (including offsite effects) e.g. foraging habitat, smothering	<p>Development of built infrastructure associated with the option, e.g. pipelines, temporary weirs, access routes.</p> <p>Indirect effects from reduction in flows, e.g. drying out of water-margin habitat.</p> <p><i>Physical loss is only likely to be significant where the boundary of the option extends within or is directly adjacent to the boundary of the Habitats Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a Habitats Site is designated, or where natural processes link the option to the site, such as through hydrological connectivity downstream of an option, long shore drift along the coast, or the option impacts the linking habitat).</i></p>
Physical damage Sedimentation/silting Prevention of natural processes Habitat degradation Erosion Trampling Fragmentation Severance/barrier effects Edge effects	<p>Construction activity leading to permanent and/or temporary damage of available habitat, sedimentation/siltation, fragmentation, etc.</p> <p><i>Physical damage is likely to be significant where the boundary of the option extends within or is directly adjacent to the boundary of the European Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat that supports species for which a Habitats Site is designated, or where natural processes link the option to the site, such as through hydrological connectivity downstream of an option or sediment drift along the coast.</i></p>
Non-physical disturbance Noise Visual presence Human presence Light pollution Vibration	<p>Noise from temporary construction or temporary pumping activities.</p> <p><i>Taking into consideration the noise level generated from general building activity (c. 122dB(A)) and considering the lowest noise level identified in appropriate guidance as likely to cause disturbance to estuarine bird species, it</i></p>

Broad categories of potential impacts on Habitats Sites (with examples)	Examples of activities resulting in impacts
	<p><i>is concluded that noise impacts could be significant up to 1km from the boundary of the Habitats Site.</i></p> <p>Noise from vehicular traffic during operation of an option. <i>Noise from construction traffic is only likely to be significant where the transport route to and from the option is within 3-5km of the boundary of the Habitats Site.</i></p> <p>Plant and personnel involved in in operation of the option. <i>These effects (noise, visual/human presence) are only likely to be significant where the boundary of the option extends within or is adjacent to the boundary of the Habitats Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a Habitats Site is designated).</i></p> <p>Options that might include artificial lighting, e.g. for security around a temporary pumping station. <i>Effects from light pollution are more likely to be significant where the boundary of the option is within 500m of the boundary of the Habitats Site.</i></p>
<p>Water table/ availability</p> <p>Drying</p> <p>Flooding/storm water</p> <p>Changes to surface water levels and flows</p> <p>Changes to groundwater level and flows</p> <p>Changes to coastal water movement</p>	<p>Changes to water levels and flows due to increased water abstraction, reduced storage or reduced flow releases from reservoirs to river systems. Potential for changes to habitat availability, for example reductions in wetted width of rivers leading to desiccation of macrophyte beds.</p> <p><i>These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the Habitats Site. However, these effects are dependent on hydrological continuity between the option and the Habitats Site, and sometimes whether the option is up or down stream from the site.</i></p>
<p>Toxic contamination</p> <p>Water pollution</p> <p>Soil contamination</p> <p>Air pollution</p>	<p>Reduced dilution in downstream or receiving waterbodies due to changes in abstraction or reduced compensation flow releases to river systems.</p> <p><i>These effects are only likely to be significant where the boundary of the option extends within the same ground or surface water catchment as the Habitats Site. However, these effects are dependent on hydrological continuity between the option and the Habitats Site,</i></p>

Broad categories of potential impacts on Habitats Sites (with examples)	Examples of activities resulting in impacts
	<p><i>and sometimes whether the option is up or down stream from the site.</i></p> <p>Air emissions associated with plant and vehicular traffic during construction and operation of options.</p> <p><i>The effect of dust is only likely to be significant where site is within or in close proximity to the boundary of the Habitats Site. Without mitigation, dust and dirt from the construction site may be transported onto the public road network and then deposited/spread by vehicles on roads up to 500m from large sites, 200m from medium sites, and 50m from small sites as measured from the site exit. Effects of road traffic emissions from the transport route to be taken by the project traffic are only likely to be significant where the protected site falls within 200 metres of the edge of a road affected.</i></p>
<p>Non-toxic contamination</p> <p>Nutrient enrichment (e.g. of soils and water)</p> <p>Algal blooms</p> <p>Changes in salinity</p> <p>Changes in thermal regime</p> <p>Changes in turbidity</p> <p>Changes in sedimentation/silting</p>	<p>Changes to water salinity, nutrient levels, turbidity, thermal regime due to increased water abstraction, discharges, storage, or reduced compensation flow releases to river systems.</p> <p><i>These effects are only likely to be of significance where the boundary of the option extends within the same ground or surface water catchment as the European site. However, these effects are dependent on hydrological continuity between the option and the Habitats Site, and sometimes whether the option is up or downstream of the Habitats Site. This level of information is not available until data such as groundwater modelling is collected.</i></p>
<p>Biological Disturbances</p> <p>Direct mortality</p> <p>Changes to habitat availability</p> <p>Out-competition by non-native species</p> <p>Selective extraction of species</p> <p>Introduction of disease</p> <p>Introduction of invasive species</p> <p>Rapid population fluctuations</p> <p>Natural succession</p>	<p>Killing or injury due to construction activity.</p> <p><i>Likely to be a risk where the boundary of the option extends within or is directly adjacent to the boundary of the Habitats Site, or within/adjacent to an offsite area of known foraging, roosting, breeding habitat (that supports species for which a site is designated).</i></p> <p>Creation of new pathway for spread of non-native invasive species.</p> <p><i>This effect is only likely to be significant where the option is situated within the Habitats Site or an upstream tributary of the Habitats Site, but also for inter-catchment water transfers.</i></p>

2.4 In-Combination Effects Assessments

Methodology

This technical appendix only reports on the in-combination effects assessment for the chosen programmes of options selected in the Draft Regional Plan (referred to as the Best Value Plan) and under Situation 4 (see SEA Environmental Report, Section 2.3 for an explanation of the BVP development and the use of a situation tree for adaptive planning):

- Draft Regional Plan (Best Value Plan) – Investment model pareto runs for Best Value Plan metrics (Customer Preference, SEA+, SEA-, Natural Capital, Carbon, Resilience (reliability, adaptability, evolvability), intergenerational equity), this is optimised on both individual Best Value Plan and cost metrics

The approach has involved two separate assessments which has comprised of options selected by 2050, see Chapter 3, and separately those selected post 2050 (and up until 2075), see Chapter 4. The pre and post 2050 options have been assessed separately because up to 2050 is the 25-year statutory WRMP period and after this the plan becomes the regional strategy with uncertainty related to planning scenarios and technical improvements for options. The two alternative programmes, the Least Cost Plan and the Best Environmental and Societal Plan, have not been subject to the HRA in-combination assessment.

The Best Value Plan contains a variety of option types which have been assessed as part of the HRA in-combination assessments such as transfers, new reservoirs, desalination and drought options, amongst others. Options within the Best Value Plan without geographical locations such as temporary use bans and non-essential use bans were not subject to HRA Stage 1 Screening and are therefore not included in the assessment. The Best Value Plan also contains catchment management schemes which were subject to HRA Stage 1. Catchment management schemes contain various options such as wetland creation, habitat restoration and enhancements, and natural flood management, amongst others. These are developed at the catchment level and do not have specific locations at this stage. The HRA Stage 1 screened each option for likely significant effects, however the assessment was not able to identify effects for specific designated sites given the options do not have defined geographical locations. As such, the HRA in-combination assessment does not consider catchment management schemes.

The in-combination assessment is based on the HRA Stage 2 (Appropriate Assessment) where they were made available by the water companies. Where they were not made available or yet undertaken, Stage 1 (Screening) assessments have been used at this stage. This approach has been discussed and accepted by the Environment Agency and Natural England. The use of Stage 1 information has the potential to flag the plan as having higher environmental risks. Stage 2 assessment information will feed into the assessment of the final plan.

An in-combination assessment aims to consider any cumulative effects of applying the options within a plan, or the cumulative effects of applying the plan alongside other plans and projects in the region. Wider in-combination effects with other plans, programmes and projects will be undertaken at the WRMP level.

An in-combination effect is considered where more than one option with potential effects on the same designated site has been identified. The assessment follows these steps:

- If impacts identified are construction-related then in-combination effects are recognised if construction dates of the options potentially overlap and could lead to a greater impact on designated sites.

- If impacts are operation-related then in-combination effects have been recognised if the combination of options could lead to a greater impact on designated sites.

The in-combination assessment only considers the potential for in-combination effects from two or more options if they were identified to have LSE at Stage 1 and/or adverse effects on site integrity at Stage 2. It is recognised that guidance states that there is potential for a project, which if implemented on its own will have no adverse effect, however if implemented with another option, the potential for adverse effects could arise. However, a precautionary approach was implemented at Stage 1 and any option that had the potential for a hydrological connection or the potential for disturbance effects were screened in as having LSE. Options screened as having no LSE where not hydrologically connected or not close to any designated sites, therefore, they would not have effects by themselves or in-combination with other options. Therefore, options screened as having no LSE were not included in the in-combination assessment.

3 Best Value Plan (Pre-2050)

3.1 Best Value Plan (Pre-2050) Options

The WRSE Best Value Plan comprises of options across the various plans within Thames Water, Affinity Water, Portsmouth Water, South East Water, SES Water and Southern Water. HRA Stage 1 Screening was undertaken on every option and flagged the requirement for HRA Stage 2 Appropriate Assessment where the potential for likely significant effects were identified. As outlined in Section 2.4, if HRA Stage 2 Appropriate Assessment was required, the results of Stage 2 have been used to inform the in-combination assessment where these have been made available by the water companies. Where they were not made available or not yet undertaken, Stage 1 (Screening) assessments have been used.

Table 3.1 presents the options within the Best Value Plan that were identified at HRA Stage 1 to have likely significant effects or the potential for adverse effects on site integrity at Stage 2 (see Section 2.4). It also presents the stage of the HRA which was used to inform the in-combination effects assessment.

Table 3.1: Options in the Best Value Plan (Pre-2050)

Option Name	Water Company	HRA Level Used for In-combination Assessment
Didcot Iver 4 Confidential Trading Option	Affinity Water	Stage 1
New Iver 2 WTW 50 MI/d Phase 1	Affinity Water	Stage 1
New Iver 2 WTW 50 MI/d Phase 2	Affinity Water	Stage 1
Egham LGS	Affinity Water	Stage 1
Hythe Beach Wells RO Desal (brackish water)	Affinity Water	Stage 2
Dover Docks Reservoir - Broomfield Banks Effluent Reuse	Affinity Water	Stage 1
Dover Constraint Removal	Affinity Water	Stage 1
Aldington Flood Storage Area	Multi-Sector	Stage 1
Aldington Scale Up	Multi-Sector	N/A ⁴
Western Rother licence and storage programme	Multi-Sector	Stage 1
Upgrade Source O Booster to 25MI/d	Portsmouth Water	Stage 1
Works A increased treatment capacity as part of Havant Thicket Development	Portsmouth Water	Stage 1
Drought Permit: Source S	Portsmouth Water	Stage 1
Havant Thicket Winter Storage Reservoir - Classic	Portsmouth Water	Stage 1
Groundwater Licence Trade - Halling	South East Water	Stage 1
New Company Transfer: RZ8 to RZ6 Transfer - Canterbury to Maidstone (10 MI/d)	South East Water	Stage 1
Desalination at Reculver (30MI/d Option)	South East Water	Stage 1

⁴ This option did not have GIS provided or any additional information on the option location therefore HRA Stage 1: Screening was not undertaken for this option as likely significant effects could not be determined

Option Name	Water Company	HRA Level Used for In-combination Assessment
RZ8 Zonal Scheme - [RES-31] - Distribute extra water from Broad Oak	South East Water	Stage 1
RZ8 Zonal Scheme - [DES-15] - Transfer of water from Ford WTW	South East Water	Stage 1
Broad Oak Reservoir	South East Water	Stage 1
Treatment capacity: upgrade Lower Itchen WSW	Southern Water	Stage 1
HWZ to Otterbourne (200) Potable - Construction	Southern Water	Stage 1
Drought option: Reduce HoF at Lower Itchen sources (38MI/d)	Southern Water	Stage 1
Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)	Southern Water	Stage 1
Test MAR	Southern Water	Stage 1
Groundwater: Eastern Yar replacement BH (1.5MI/d)	Southern Water	Stage 1
Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)	Southern Water	Stage 1
Recycling: Sandown WwTW (8.1MI/d)	Southern Water	Stage 1
Desalination: East Thanet coast & transfer (20MI/d) Phase 2	Southern Water	Stage 1
Desalination: East Thanet coast & transfer (20MI/d)	Southern Water	Stage 1
Otterbourne to Gaters Mill: 45MI/d	Southern Water	Stage 1
Rye groundwater reconfiguration	Southern Water	Stage 1
Recycling: Hastings WTW conjunctive use with Darwell reservoir (15.3MI/d)	South East Water	Stage 1
Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d)	Southern Water	Stage 1
Pulborough to Worthing: 60MI/d	Southern Water	Stage 1
Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)	Southern Water	Stage 1
Thames-Lee Tunnel extension from Lockwood PS to King George V Reservoir intake	Thames Water	Stage 1
TWRM extension - Hampton to Battersea - Construction	Thames Water	Stage 2
New WTW at Kempton - 150MI/d - Construction	Thames Water	Stage 2
STT - Pipeline 500MI/d - Construction	Thames Water	Stage 2
Groundwater Development - Datchet Existing Source DO Increase	Thames Water	Stage 1
Transfer from WTW in Abingdon to SWA - 48MI/d	Thames Water	Stage 1
Groundwater Development - Moultsford Groundwater Source	Thames Water	Stage 2
Abingdon Reservoir to Farmoor Reservoir pipeline	Thames Water	Stage 2
Romsey Groundwater	Southern Water	Stage 1
Southampton link main	Southern Water	Stage 1
Canals & Rivers Trust Slough	Affinity Water	Stage 1

Option Name	Water Company	HRA Level Used for In-combination Assessment
Brent Reservoir Transfer to Iver	Affinity Water	Stage 1
Egham to Iver 50MLD (Supply 2040)	Affinity Water	Stage 1
Deal Supply Scheme	Affinity Water	Stage 1
SRN Source D To Havant Thicket: 50MI/d	Portsmouth Water	Stage 1
Peacehaven Recycling at Arlington (30MI/d Option)	South East Water	Stage 1
New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth (10MI/d)	South East Water	Stage 1
Import from Portsmouth Water (additional 9MI/d)	Southern Water	Stage 1
Import from Portsmouth Water	Southern Water	Stage 1
Transfer: Havant Thicket reservoir - Otterbourne WSW - first Section, raw (90MI/d)	Southern Water	Stage 1
Desalination: Isle of Sheppey (20MI/d)	Southern Water	Stage 1
Recycling: Sittingbourne industrial reuse (7.5MI/d)	Southern Water	Stage 1
Desalination: River Thames estuary (20MI/d)	Southern Water	Stage 1
Desalination: River Thames estuary (20MI/d) Phase 2	Southern Water	Stage 1
Import: Havant Thicket - Otterbourne direct raw water transfer - second section (90MI/d)	Southern Water	Stage 1
Conjunctive Benefit of Budds farm 60 M/d to Havant Thicket	Southern Water	Stage 1
Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60MI/d)	Southern Water	Stage 1
Worthing to Brighton: 40MI/d	Southern Water	Stage 1
Recycling: Littlehampton WwTW (15MI/d)	Southern Water	Stage 1
Havant Thicket To Pulborough WTW: 50MI/d	Southern Water	Stage 1
Tilmore to Pulborough: 10MI/d	Southern Water	Stage 1
Outwood To Turners Hill: 10MI/d	Southern Water	Stage 1
Culham to HWZ(200) Potable - Construction ⁶	Southern Water	Stage 1

3.2 HRA In-combination Assessment findings for Best Value Plan (Pre-2050) options

The results of the in-combination assessment are presented in Table 3.2, Table 3.3 and Table 3.4. This assessment suggests the following Designated Sites may be adversely affected by multiple options, resulting in in-combination effects:

Arun Valley Ramsar

⁶ The HRA Stage 1: Screening for Culham to HWZ(200) Potable – Construction has been undertaken for the whole route covering Culham to HWZ(200) Potable – Construction and HWZ to Otterbourne (200) Potable – Construction. This will be updated for the final plan.

Designated site may be affected by:

- Recycling: Littlehampton WwTW (15MI/d)
- Havant Thicket To Pulborough WTW: 50MI/d
- SRN Source D To Havant Thicket: 50MI/d
- Western Rother licence and storage programme
- Drought Permit: Source S
- Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d)
- Pulborough to Worthing: 60MI/d

Assessment:

These feature within the South East Water, Portsmouth Water and Southern Water WRMPs. The construction periods of the Western Rother licence and storage programme, SRN Source D To Havant Thicket: 50MI/d, and Pulborough to Worthing: 60MI/d options overlap meaning that in-combination effects are likely during the construction period. In-combination effects during operation may be possible.

Arun Valley SAC

Designated site may be affected by:

- Recycling: Littlehampton WwTW (15MI/d)
- Havant Thicket To Pulborough WTW: 50MI/d
- Western Rother licence and storage programme
- Drought Permit: Source S
- Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d)
- Pulborough to Worthing: 60MI/d

Assessment:

These feature within the South East Water, Portsmouth Water and Southern Water WRMPs. The construction periods of the Western Rother licence and storage programme and Pulborough to Worthing: 60MI/d options overlap meaning that in-combination effects are likely during the construction period. In-combination effects during operation may be possible.

Arun Valley SPA

Designated site may be affected by:

- Western Rother licence and storage programme
- Drought Permit: Source S
- Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d)
- Pulborough to Worthing: 60MI/d

Assessment:

These feature within the South East Water, Portsmouth Water and Southern Water WRMPs. The construction periods of the Western Rother licence and storage programme and Pulborough to Worthing: 60MI/d options overlap meaning that in-combination effects are likely during the construction period. In-combination effects during operation may be possible.

Blean Complex SAC:

Designated site may be affected by:

- RZ8 Zonal Scheme - [RES-31] - Distribute extra water from Broad Oak
- New Company Transfer: RZ8 to RZ6 Transfer - Canterbury to Maidstone (10 MI/d)

Assessment:

These feature within the South East Water WRMP. The construction periods of these options overlap meaning that in-combination affects are likely during the construction period.

Chichester and Langstone Harbours Ramsar/SPA

Designated sites may be affected by:

- Upgrade Source O Booster to 25Mld
- Works A increased treatment capacity as part of Havant Thicket Development
- Havant Thicket Winter Storage Reservoir – Classic
- Havant Thicket To Pulborough WTW: 50MI/d
- Transfer: Havant Thicket reservoir – Otterbourne WSW – First Section (90 MI/d)
- SRN Source D To Havant Thicket: 50MI/d
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60MI/d)
- Conjunctive Benefit of Budds farm 60 MI/d to Havant Thicket
- Import: Havant Thicket – Otterbourne direct raw water transfer – second section (90 MI/d)

Assessment:

These feature within the Portsmouth Water and Southern Water WRMPs. The construction periods of these options do overlap meaning that in-combination effects are possible during the construction period of these options. In-combination effects during operation may be possible.

Cothill Fen SAC

Designated site may be affected by:

- Abingdon Reservoir to Farmoor Reservoir pipeline
- Transfer from WTW in Abingdon to SWA - 48MI/d

Assessment:

These feature within the Thames Water WRMP. The construction periods of these options do not overlap and therefore no in-combination effects are expected.

Dover to Kingsdown Cliffs SAC

Designated site may be affected by:

- Hythe Beach Wells RO Desal (brackish water)
- Deal Supply Scheme
- SRN Source D To Havant Thicket: 50MI/d

Assessment:

These feature within the Affinity Water, Southern Water and Portsmouth Water WRMPs. The construction periods of these options do overlap meaning that in-combination effects are possible during the construction period of these options.

Duncton to Bignor Escarpment SAC

Designated site may be affected by:

- Drought Permit: Source S
- SRN Source D To Havant Thicket: 50MI/d

Assessment:

These feature in Portsmouth Water WRMP. The construction periods of these options do not overlap and therefore no in-combination effects are expected. No operational effects are anticipated from these options resulting in no in-combination effects.

Dungeness SAC

Designated site may be affected by:

- New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth
- Havant Thicket To Pulborough WTW

Assessment:

These feature in South East Water and Southern Water WRMPs. The construction periods of these options do not overlap and therefore no in-combination effects are expected. No operational effects are anticipated from these options resulting in no in-combination effects.

Dungeness, Romney Marsh and Rye Bay Ramsar

Designated site may be affected by:

- New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth
- Rye groundwater reconfiguration

Assessment:

These feature within the South East Water and Southern Water WRMPs. The construction periods of these options do not overlap and therefore no in-combination effects are expected. No operational effects are anticipated from these options resulting in no in-combination effects.

Dungeness, Romney Marsh and Rye Bay SPA

Designated site may be affected by:

- Rye groundwater reconfiguration
- Recycling: Hastings WTW conjunctive use with Darwell reservoir (15.3MI/d)
- New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth

Assessment:

These feature within the Southern Water and South East Water WRMPs. The construction periods of these options do not overlap and therefore no in-combination affects are likely during the construction period. No operational impacts are predicted from Recycling: Hastings WTW conjunctive use with

Darwell reservoir (15.3Ml/d), resulting in no in-combination effects. No operational effects are anticipated from these options resulting in no in-combination effects.

Kennet and Lambourne Floodplain SAC

Designated site may be affected by:

- Import from Portsmouth Water (additional 9Ml/d)
- Import from Portsmouth Water
- Culham to HWZ(200) Potable - Construction

Assessment:

These options feature within the Southern Water WRMPs. The construction periods of these options do not overlap meaning that in-combination effects are not likely during the construction period. No in-combination effects during operation are anticipated.

Kennet Valley/ Alderwoods SAC

Designated site may be affected by:

- Import from Portsmouth Water (additional 9Ml/d)
- Import from Portsmouth Water
- Culham to HWZ(200) Potable - Construction

Assessment:

These options feature within the Southern Water WRMPs. The construction periods of these options do not overlap meaning that in-combination effects are not likely during the construction period. No in-combination effects during operation are anticipated.

Kingley Vale SAC

Designated site may be affected by:

- Upgrade Source O Booster to 25Mld
- SRN Source D To Havant Thicket: 50Ml/d
- Havant Thicket To Pulborough WTW

Assessment:

These feature within the Portsmouth Water WRMP. The construction periods of Upgrade Source O Booster to 25Mld and Havant Thicket To Pulborough WTW overlap therefore resulting in possible in-combination effects during this period.

Lee Valley Ramsar/SPA

Designated site may be affected by:

- Didcot Iver 4 Confidential Trading Option
- Thames-Lee Tunnel extension from Lockwood PS to King George V Reservoir intake

Assessment:

These feature within the Affinity Water and Thames Water WRMPs. The construction periods of these options do overlap and therefore in-combination effects are likely during the construction period.

Medway Estuary and Marshes SPA/Ramsar

Designated site may be affected by:

- Groundwater Licence Trade - Halling
- Desalination: Isle of Sheppey

Assessment:

These feature within the Southern Water and South East Water WRMPs. The construction periods of these options do not overlap and therefore in-combination affects are not likely during the construction period. Operational effects are likely for Desalination: Isle of Sheppey option but not Groundwater Licence Trade – Halling, therefore in-combination effects are not anticipated.

Mole Gap to Reigate Escarpment SAC

Designated site may be affected by:

- Outwood To Turners Hill
- Culham to HWZ(200) Potable - Construction[1]

Assessment:

These feature within the Southern Water WRMP. The construction periods of these options do overlap and therefore in-combination affects are likely during the construction period.

Portsmouth Harbour Ramsar/SPA

Designated sites may be affected by:

- Transfer: Havant Thicket reservoir - Otterbourne WSW - First Section (90 MI/d)
- Import: Havant Thicket - Otterbourne direct raw water transfer - second section (90 MI/d),
- Conjunctive Benefit of Budds farm 60 MI/d to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP (60MI/d)
- Havant Thicket Winter Storage Reservoir - Classic

Assessment:

These feature within the Southern Water WRMP. The construction periods of these options do overlap meaning that in-combination effects are possible during the construction period of these options. In-combination effects during operation may be possible.

River Itchen SAC

Designated site may be affected by:

- Egham LGS
- Treatment capacity: upgrade Lower Itchen WSW
- Drought option: Reduce HoF at Lower Itchen sources (38MI/d)
- Otterbourne to Gaters Mill: 45MI/d
- Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)
- Southampton link main
- Import from Portsmouth Water
- Transfer: Havant Thicket reservoir - Otterbourne WSW - First Section (90 MI/d)
- Import: Havant Thicket - Otterbourne direct raw water transfer

Assessment:

These feature within the Affinity Water and Southern Water WRMPs. The construction periods of the Treatment capacity: upgrade Lower Itchen WSW and Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d) options overlap and therefore in-combination effects are likely during the construction period. No in-combination effects during operation are anticipated.

River Lambourne SAC

Designated site may be affected by:

- Import from Portsmouth Water (additional 9MI/d)
- Import from Portsmouth Water
- Culham to HWZ(200) Potable - Construction

Assessment:

These options feature within the Southern Water WRMPs. The construction periods of these options do not overlap meaning that in-combination effects are not likely during the construction period. No in-combination effects during operation are anticipated.

Singleton and Cocking Tunnels SAC

Designated site may be affected by:

- Havant Thicket To Pulborough WTW
- SRN Source D To Havant Thicket: 50MI/d
- Upgrade Source O Booster to 25MI/d

Assessment:

These feature within the Portsmouth Water WRMP. The construction periods of Upgrade Source O Booster to 25MI/d and Havant Thicket To Pulborough WTW overlap therefore resulting in possible in-combination effects during this period.

Solent and Dorset Coast SPA

Designated site may be affected by:

- Culham to HWZ(200) Potable - Construction
- Import: Havant Thicket - Otterbourne direct raw water transfer
- Conjunctive Benefit of Budds farm to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP
- Southampton link main
- Groundwater: Eastern Yar replacement BH (1.5MI/d)

Assessment:

These feature within Southern Water WRMP. The construction periods of Culham to HWZ(200) Potable – Construction and Groundwater: Eastern Yar replacement BH (1.5MI/d) overlap between 2036-2040, therefore resulting in possible in-combination effects during this period.

The construction periods of Import: Havant Thicket - Otterbourne direct raw water transfer, Conjunctive Benefit of Budds farm to Havant Thicket, Recycling: Recharge of Havant Thicket reservoir from Budds

Farm and new WRP, and Southampton link main overlap between 2026-2031, therefore resulting in possible in-combination effects during this period.

Solent and Southampton Water Ramsar

Designated site may be affected by:

- Culham to HWZ(200) Potable - Construction
- Import: Havant Thicket - Otterbourne direct raw water transfer
- Conjunctive Benefit of Budds farm to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP
- Transfer: Havant Thicket reservoir - Otterbourne WSW
- Southampton link main
- Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)
- HWZ to Otterbourne (200) Potable - Construction
- Drought option: Reduce HoF at Lower Itchen sources (38MI/d)
- Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)
- Test MAR
- Groundwater: Eastern Yar replacement BH (1.5MI.d)
- Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)
- Recycling: Sandown WwTW (8.1MI/d)

Assessment:

These feature within Southern Water WRMP. The construction periods of:

- HWZ to Otterbourne (200) Potable – Construction;
- Culham to HWZ(200) Potable - Construction
- Test MAR;
- Groundwater: Eastern Yar replacement BH (1.5MI.d); and
- Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)

overlap between 2036-2042 therefore resulting in possible in-combination effects during this period.

The construction periods of:

- Import: Havant Thicket - Otterbourne direct raw water transfer
- Conjunctive Benefit of Budds farm to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP
- Transfer: Havant Thicket reservoir - Otterbourne WSW, Southampton link main
- Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)
- Drought option: Reduce HoF at Lower Itchen sources (38MI/d),
- Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)
- Recycling: Sandown WwTW (8.1MI/d)

overlap between 2026-2031 therefore resulting in possible in-combination effects during this period.

No in-combination effects during operation are anticipated.

Solent and Southampton Water SPA

Designated site may be affected by:

- Import: Havant Thicket - Otterbourne direct raw water transfer
- Conjunctive Benefit of Budds farm to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP
- Transfer: Havant Thicket reservoir - Otterbourne WSW
- Southampton link main
- Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)
- HWZ to Otterbourne (200) Potable - Construction
- Drought option: Reduce HoF at Lower Itchen sources (38MI/d)
- Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)
- Test MAR
- Groundwater: Eastern Yar replacement BH (1.5MI.d)
- Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)
- Recycling: Sandown WwTW (8.1MI/d)

Assessment:

These feature within Southern Water WRMP. The construction periods of:

- HWZ to Otterbourne (200) Potable – Construction;
- Test MAR;
- Groundwater: Eastern Yar replacement BH (1.5MI.d); and
- Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)

overlap between 2036-2042 therefore resulting in possible in-combination effects during this period.

The construction periods of:

- Import: Havant Thicket - Otterbourne direct raw water transfer
- Conjunctive Benefit of Budds farm to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP
- Transfer: Havant Thicket reservoir - Otterbourne WSW, Southampton link main
- Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)
- Drought option: Reduce HoF at Lower Itchen sources (38MI/d),
- Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)
- Recycling: Sandown WwTW (8.1MI/d)

overlap between 2026-2031 therefore resulting in possible in-combination effects during this period.

No in-combination effects during operation are anticipated.

Solent Maritime SAC

Designated site may be affected by:

- Upgrade Source O Booster to 25MI/d
- Works A increased treatment capacity as part of Havant Thicket Development

- Havant Thicket Winter Storage Reservoir – Classic
- HWZ to Otterbourne (200) Potable – Construction
- Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)
- Groundwater: Eastern Yar replacement BH (1.5MI.d)
- Transfer: Otterbourne WSW – Testwood lakes raw (60MI/d)
- Southampton link main
- SRN Source D To Havant Thicket: 50MI/d
- Transfer: Havant Thicket reservoir – Otterbourne WSW
- Import: Havant Thicket - Otterbourne direct raw water transfer
- Conjunctive Benefit of Budds farm to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP
- Havant Thicket To Pulborough WTW

Assessment:

These feature within Southern Water WRMP. The construction periods of:

- Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)
- Transfer: Otterbourne WSW – Testwood lakes raw (60MI/d)
- Southampton link main
- SRN Source D To Havant Thicket: 50MI/d
- Transfer: Havant Thicket reservoir – Otterbourne WSW
- Import: Havant Thicket - Otterbourne direct raw water transfer
- Conjunctive Benefit of Budds farm to Havant Thicket
- Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP

overlap between 2026-2031 therefore resulting in possible in-combination effects during this period.

The construction periods of:

- Upgrade Source O Booster to 25MI/d
- Groundwater: Eastern Yar replacement BH (1.5MI.d)
- Havant Thicket To Pulborough WTW

overlap between 2036-2040 therefore resulting in possible in-combination effects during this period.

No in-combination effects during operation are anticipated.

South West London Waterbodies Ramsar

Designated site may be affected by:

- Egham to Iver
- Canals and River Trust Slough
- Groundwater Development – Datchet Existing Source DO Increase
- New WTW at Kempton - 150MI/d - Construction
- New Iver 2 WTW 50 MI/d Phase 1

Assessment:

These feature within Affinity Water and Thames Water WRMPs. The construction periods of Egham to Iver and Canals and River Trust Slough overlap, as does New WTW at Kempton - 150ML/d – Construction and New Iver 2 WTW 50 ML/d Phase 1, therefore resulting in possible in-combination effects during the construction period. No in-combination operation effects are anticipated.

South West London Waterbodies SPA

Designated site may be affected by:

- Canals & Rivers Trust Slough, Brent Reservoir Transfer to Iver
- Egham to Iver 50MLD (Supply 2040)
- New WTW at Kempton - 150ML/d – Construction
- Groundwater Development - Datchet Existing Source DO Increase
- New Iver 2 WTW 50 ML/d Phase 1

Assessment:

These feature within the Thames Water and Affinity Water WRMPs. The construction periods of the New WTW at Kempton - 150ML/d – Construction and New Iver 2 WTW 50 ML/d Phase 1 options overlap and therefore in-combination affects are likely during the construction period. No in-combination operation effects are anticipated.

Stodmarsh Ramsar/SAC

Designated sites will be affected by:

- Dover Docks Reservoir - Broomfield Banks Effluent Reuse
- Dover Constraint Removal
- Aldington Flood Storage Area
- RZ8 Zonal Scheme – [RES-31] – Distribute extra water from Broad Oak
- Broad Oak Reservoir

Assessment:

These feature within Affinity Water and South East Water WRMPs. The construction periods of Dover Constraint Removal, RZ8 Zonal Scheme – [RES-31] – Distribute extra water from Broad Oak, and Broad Oak Reservoir overlap therefore resulting in possible in-combination effects during the construction period.

Stodmarsh SPA

Designated site may be affected by:

- Dover Constraint Removal
- Aldington Flood Storage Area
- RZ8 Zonal Scheme – [RES-31] – Distribute extra water from Broad Oak
- Broad Oak Reservoir

Assessment:

These feature within Affinity Water and South East Water WRMPs. The construction periods of Dover Constraint Removal, RZ8 Zonal Scheme – [RES-31] – Distribute extra water from Broad Oak, and Broad Oak Reservoir overlap therefore resulting in possible in-combination effects during the construction period.

Thames Estuary and Marshes Ramsar

Designated site may be affected by:

- Recycling: Sittingbourne Industrial Reuse
- Desalination: River Thames estuary

Assessment:

These feature within Southern Water WRMP. The construction periods of these options do not overlap and therefore in-combination effects are not likely during this period. In-combination effects during operation may be possible.

Thanet Coast and Sandwich Bay Ramsar/SPA

Designated sites will be affected by:

- Desalination at Reculver (30MI/d Option)
- RZ8 Zonal Scheme - [DES-15] - Transfer of water from Ford WTW
- Broad Oak Reservoir
- Desalination: East Thanet coast & transfer (20MI/d) Phase 2
- Desalination: East Thanet coast & transfer (20MI/d)

Assessment:

These feature within the South East Water and Southern Water WRMPs. The construction period of Desalination at Reculver (30MI/d Option) and RZ8 Zonal Scheme – [DES-15] – Transfer of water from Ford WTW overlap therefore resulting in possible in-combination effects during the construction period.

Thanet Coast and Sandwich Bay SAC

Designated site may be affected by:

- Dover Docks Reservoir - Broomfield Banks Effluent Reuse
- Desalination: East Thanet coast & transfer (20MI/d) Phase 2
- Desalination: East Thanet coast & transfer (20MI/d)

Assessment:

These feature within the South East Water and Southern Water WRMPs. The construction period of Dover Docks Reservoir - Broomfield Banks Effluent Reuse and RZ8 Zonal Scheme – [DES-15] – Transfer of water from Ford WTW overlap therefore resulting in possible in-combination effects during the construction period.

Thanet Coast SAC

Designated site may be affected by:

- Desalination at Reculver (30MI/d Option)
- Desalination: East Thanet coast & transfer (20MI/d) Phase 2
- Desalination: East Thanet coast & transfer (20MI/d)

Assessment:

These feature within the South East Water and Southern Water WRMPs. The construction period of Desalination at Reculver (30MI/d Option) and RZ8 Zonal Scheme – [DES-15] – Transfer of water from Ford WTW overlap therefore resulting in possible in-combination effects during the construction period.

The Swale Ramsar/SPA

Designated site may be affected by:

- Desalination: Isle of Sheppey (20MI/d)
- Recycling: Sittingbourne Industrial Reuse (7.5MI/d)

Assessment:

These feature within the Southern Water WRMP. The construction periods of these options do not overlap meaning that in-combination effects are not likely during the construction period. No in-combination effects during operation are anticipated.

Wimbledon Common SAC

Designated site may be affected by:

- TWRM extension - Hampton to Battersea - Construction
- Didcot Iver 4 Confidential Trading Option

Assessment:

These feature in Affinity Water and Thames Water WRMPs. The construction periods of these options do not overlap and therefore no in-combination affects are likely during the construction period.

At this stage in the options design, it is not possible to identify and quantify in more detail the potential in-combination effects on the designated sites. In the next stages of the option development the identified options will undertake a more in-depth analysis of the potential effects and detail specific mitigation measures.

The assessments presented above are summarised across three tables below (due to the number of designated sites). The tables are split to present the sites alphabetically where Table 3.2 includes designates sites named A – O, Table 3.3 is P – S and Table 3.4 is T – W. At the bottom of each table, the number of options with the potential to affect each designated site is counted.

Table 3.2: In-combination results for options affecting Designated Sites when listed A-O (inclusive)

Option name	Arun Valley Ramsar	Arun Valley SAC	Arun Valley SPA	Ashdown Forest SAC	Ashdown Forest SPA	Blean Complex SAC	Bridlesford Copses SAC	Chichester and Langstone Harbours Ramsar	Chichester and Langstone Harbours SPA	Cothill Fen SAC	Dixton Wood SAC	Dover to Kingsdown Cliffs SAC	Duncton to Bignor Escarpment SAC	Dungeness SAC	Dungeness, Romney Marsh and Rye Bay Ramsar	Dungeness, Romney Marsh and Rye Bay SPA	Emer Bog SAC	Folkestone to Etchinghill Escarpment SAC	Hartslock Wood SAC	Kennet and Lambourne Floodplain SAC	Kennet Valley/Alderwoods SAC	Kingley Vale SAC	Lee Valley Ramsar	Lee Valley SPA	Lewes Downs SAC	Medway Estuary and Marshes Ramsar	Medway Estuary and Marshes SPA	Mole Gap to Reigate Escarpment SAC	North Downs Woodlands SAC	Oxford Meadows SAC
Didcot Iver 4 Confidential Trading Option																														
New Iver 2 WTW 50 MI/d Phase 1																														
New Iver 2 WTW 50 MI/d Phase 2																														
Egham LGS																														
Hythe Beach Wells RO Desal (brackish water)																														
Dover Docks Reservoir - Broomfield Banks Effluent Reuse																														
Dover Constraint Removal																														
Aldington Flood Storage Area																														
Aldington Scale Up	With no information on the proposed locations for additional options, likely significant effects on N2K Sites cannot be identified.																													
Western Rother licence and storage programme																														
Upgrade Source O Booster to 25Mld																														
Works A increased treatment capacity as part of Havant Thicket Development																														
Drought Permit: Source S																														
Havant Thicket Winter Storage Reservoir - Classic																														
Groundwater Licence Trade - Halling																														
New Company Transfer: RZ8 to RZ6 Transfer - Canterbury to Maidstone (10 MI/d)																														
Desalination at Reculver (30MI/d Option)																														
RZ8 Zonal Scheme - [RES-31] - Distribute extra water from Broad Oak																														

Option name	Arun Valley Ramsar	Arun Valley SAC	Arun Valley SPA	Ashdown Forest SAC	Ashdown Forest SPA	Blean Complex SAC	Briddlesford Copses SAC	Chichester and Langstone Harbours Ramsar	Chichester and Langstone Harbours SPA	Cothill Fen SAC	Dixton Wood SAC	Dover to Kingsdown Cliffs SAC	Duncton to Bignor Escarpment SAC	Dungeness SAC	Dungeness, Romney Marsh and Rye Bay Ramsar	Dungeness, Romney Marsh and Rye Bay SPA	Emer Bog SAC	Folkestone to Etchinghill Escarpment SAC	Hartslock Wood SAC	Kennet and Lambourne Floodplain SAC	Kennet Valley/Aldenwoods SAC	Kingley Vale SAC	Lee Valley Ramsar	Lee Valley SPA	Lewes Downs SAC	Medway Estuary and Marshes Ramsar	Medway Estuary and Marshes SPA	Mole Gap to Reigate Escarpment SAC	North Downs Woodlands SAC	Oxford Meadows SAC
RZ8 Zonal Scheme - [DES-15] - Transfer of water from Ford WTW																														
Broad Oak Reservoir																														
Treatment capacity: upgrade Lower Itchen WSW																														
HWZ to Otterbourne (200) Potable - Construction																														
Drought option: Reduce HoF at Lower Itchen sources (38MI/d)																														
Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)																														
Test MAR																														
Groundwater: Eastern Yar replacement BH (1.5MI/d)																														
Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)																														
Recycling: Sandown WwTW (8.1MI/d)																														
Desalination: East Thanet coast & transfer (20MI/d) Phase 2																														
Desalination: East Thanet coast & transfer (20MI/d)																														
Otterbourne to Gaters Mill: 45MI/d																														
Rye groundwater reconfiguration																														
Recycling: Hastings WTW conjunctive use with Darwell reservoir (15.3MI/d)																														
Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d)																														

Option name	Arun Valley Ramsar	Arun Valley SAC	Arun Valley SPA	Ashdown Forest SAC	Ashdown Forest SPA	Blean Complex SAC	Briddlesford Copses SAC	Chichester and Langstone Harbours Ramsar	Chichester and Langstone Harbours SPA	Cothill Fen SAC	Dixton Wood SAC	Dover to Kingsdown Cliffs SAC	Duncton to Bignor Escarpment SAC	Dungeness SAC	Dungeness, Romney Marsh and Rye Bay Ramsar	Dungeness, Romney Marsh and Rye Bay SPA	Emer Bog SAC	Folkestone to Etchinghill Escarpment SAC	Hartslock Wood SAC	Kennet and Lambourne Floodplain SAC	Kennet Valley/Aldenwoods SAC	Kingley Vale SAC	Lee Valley Ramsar	Lee Valley SPA	Lewes Downs SAC	Medway Estuary and Marshes Ramsar	Medway Estuary and Marshes SPA	Mole Gap to Reigate Escarpment SAC	North Downs Woodlands SAC	Oxford Meadows SAC
Pulborough to Worthing: 60MI/d																														
Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)																														
Thames-Lee Tunnel extension from Lockwood PS to King George V Reservoir intake																														
TWRM extension - Hampton to Battersea - Construction																														
New WTW at Kempton - 150MI/d - Construction																														
STT - Pipeline 500MI/d - Construction																														
Groundwater Development - Datchet Existing Source DO Increase																														
Transfer from WTW in Abingdon to SWA - 48MI/d																														
Groundwater Development - Moulsoford Groundwater Source																														
Abingdon Reservoir to Farmoor Reservoir pipeline																														
Romsey Groundwater																														
Didcot Iver 4 Confidential Trading Option																														
Southampton link main																														
Canals & Rivers Trust Slough Slough																														
Brent Reservoir Transfer to Iver																														
Egham to Iver 50MLD (Supply 2040)																														
Deal Supply Scheme																														
SRN Source D To Havant Thicket: 50MI/d																														
Peacehaven Recycling at Arlington																														

Option name	Arun Valley Ramsar	Arun Valley SAC	Arun Valley SPA	Ashdown Forest SAC	Ashdown Forest SPA	Blean Complex SAC	Briddlesford Copses SAC	Chichester and Langstone Harbours Ramsar	Chichester and Langstone Harbours SPA	Cothill Fen SAC	Dixton Wood SAC	Dover to Kingsdown Cliffs SAC	Duncton to Bignor Escarpment SAC	Dungeness SAC	Dungeness, Romney Marsh and Rye Bay Ramsar	Dungeness, Romney Marsh and Rye Bay SPA	Emer Bog SAC	Folkestone to Etchinghill Escarpment SAC	Hartstock Wood SAC	Kennet and Lambourne Floodplain SAC	Kennet Valley/Aldenwoods SAC	Kingley Vale SAC	Lee Valley Ramsar	Lee Valley SPA	Lewes Downs SAC	Medway Estuary and Marshes Ramsar	Medway Estuary and Marshes SPA	Mole Gap to Reigate Escarpment SAC	North Downs Woodlands SAC	Oxford Meadows SAC
New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth																														
Import from Portsmouth Water (additional 9Ml/d)																														
Import from Portsmouth Water																														
Transfer: Havant Thicket reservoir - Otterbourne WSW																														
Desalination: Isle of Sheppey																														
Recycling: Sittingbourne Industrial Reuse																														
Desalination: River Thames estuary																														
Desalination: River Thames estuary Phase 2																														
Import: Havant Thicket - Otterbourne direct raw water transfer																														
Conjunctive Benefit of Budds farm to Havant Thicket																														
Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP																														
Worthing to Brighton: 40Ml/d																														
Recycling: Littlehampton WwTW																														
Havant Thicket To Pulborough WTW																														
Tilmore to Pilborough																														
Outwood To Turners Hill																														
Culham to HWZ(200) Potable - Construction[1]																														
Transfer - SEW to Guildford - Conveyance Element																														

Option name	Arun Valley Ramsar	Arun Valley SAC	Arun Valley SPA	Ashdown Forest SAC	Ashdown Forest SPA	Blean Complex SAC	Briddlesford Copses SAC	Chichester and Langstone Harbours Ramsar	Chichester and Langstone Harbours SPA	Cothill Fen SAC	Dixton Wood SAC	Dover to Kingsdown Cliffs SAC	Duncton to Bignor Escarpment SAC	Dungeness SAC	Dungeness, Romney Marsh and Rye Bay Ramsar	Dungeness, Romney Marsh and Rye Bay SPA	Emer Bog SAC	Folkestone to Etchinghill Escarpment SAC	Hartstock Wood SAC	Kennet and Lambourne Floodplain SAC	Kennet Valley/Aldenwoods SAC	Kingley Vale SAC	Lee Valley Ramsar	Lee Valley SPA	Lewes Downs SAC	Medway Estuary and Marshes Ramsar	Medway Estuary and Marshes SPA	Mole Gap to Reigate Escarpment SAC	North Downs Woodlands SAC	Oxford Meadows SAC
Number of options with the potential to affect the designated site	7	6	4	1	1	2	1	9	9	2	1	3	2	3	2	3	1	1	1	3	3	3	2	2	1	2	2	2	1	1

Table 3.3: In-combination results for options affecting Designated Sites when listed P-S (inclusive)

Option name	Pevensey SAC	Pevensey Levels Ramsar	Portsmouth Harbour Ramsar	Portsmouth Harbour SPA	Richmond Park SAC	River Clun SAC	River Itchen SAC	River Lambourne SAC	River Usk SAC	River Wye SAC	Rook Cliff SAC	Sandwich Bay SAC	Severn Estuary Ramsar	Severn Estuary SAC	Severn Estuary SPA	Singleton and Cocking Tunnels SAC	Solent & Isle of Wight Lagoons SAC	Solent and Dorset Coast SPA	Solent and Southampton Water Ramsar	Solent and Southampton Water SPA	Solent Maritime SAC	South West London Waterbodies Ramsar	South West London Waterbodies SPA	Stodmarsh Ramsar	Stodmarsh SAC	Stodmarsh SPA
Didcot Iver 4 Confidential Trading Option																										
New Iver 2 WTW 50 MI/d Phase 1																										
New Iver 2 WTW 50 MI/d Phase 2																										
Egham LGS																										
Hythe Beach Wells RO Desal (brackish water)																										
Dover Docks Reservoir - Broomfield Banks Effluent Reuse																										
Dover Constraint Removal																										
Aldington Flood Storage Area																										
Aldington Scale Up	With no information on the proposed locations for additional options, likely significant effects on N2K Sites cannot be identified.																									
Western Rother licence and storage programme																										

Option name	Pevensey SAC	Pevensey Levels Ramsar	Portsmouth Harbour Ramsar	Portsmouth Harbour SPA	Richmond Park SAC	River Clun SAC	River Itchen SAC	River Lambourne SAC	River Usk SAC	River Wye SAC	Rook Cliff SAC	Sandwich Bay SAC	Severn Estuary Ramsar	Severn Estuary SAC	Severn Estuary SPA	Singleton and Cocking Tunnels SAC	Solent & Isle of Wight Lagoons SAC	Solent and Dorset Coast SPA	Solent and Southampton Water Ramsar	Solent and Southampton Water SPA	Solent Maritime SAC	South West London Waterbodies Ramsar	South West London Waterbodies SPA	Stodmarsh Ramsar	Stodmarsh SAC	Stodmarsh SPA
Upgrade Source O Booster to 25Mld																										
Works A increased treatment capacity as part of Havant Thicket Development																										
Drought Permit: Source S																										
Havant Thicket Winter Storage Reservoir - Classic																										
Groundwater Licence Trade - Halling																										
New Company Transfer: RZ8 to RZ6 Transfer - Canterbury to Maidstone (10 MI/d)																										
Desalination at Reculver (30MI/d Option)																										
RZ8 Zonal Scheme - [RES-31] - Distribute extra water from Broad Oak																										
RZ8 Zonal Scheme - [DES-15] - Transfer of water from Ford WTW																										
Broad Oak Reservoir																										
Treatment capacity: upgrade Lower Itchen WSW																										
HWZ to Otterbourne (200) Potable - Construction																										
Drought option: Reduce HoF at Lower Itchen sources (38MI/d)																										

Option name	Pevensey SAC	Pevensey Levels Ramsar	Portsmouth Harbour Ramsar	Portsmouth Harbour SPA	Richmond Park SAC	River Clun SAC	River Itchen SAC	River Lambourne SAC	River Usk SAC	River Wye SAC	Rook Cliff SAC	Sandwich Bay SAC	Severn Estuary Ramsar	Severn Estuary SAC	Severn Estuary SPA	Singleton and Cocking Tunnels SAC	Solent & Isle of Wight Lagoons SAC	Solent and Dorset Coast SPA	Solent and Southampton Water Ramsar	Solent and Southampton Water SPA	Solent Maritime SAC	South West London Waterbodies Ramsar	South West London Waterbodies SPA	Stodmarsh Ramsar	Stodmarsh SAC	Stodmarsh SPA
Drought option: Candover Drought Permit/Order (2027-2029 only) (15.4MI/d)																										
Test MAR																										
Groundwater: Eastern Yar replacement BH (1.5MI/d)																										
Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)																										
Recycling: Sandown WwTW (8.1MI/d)																										
Desalination: East Thanet coast & transfer (20MI/d) Phase 2																										
Desalination: East Thanet coast & transfer (20MI/d)																										
Otterbourne to Gaters Mill: 45MI/d																										
Rye groundwater reconfiguration																										
Recycling: Hastings WTW conjunctive use with Darwell reservoir (15.3MI/d)																										
Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d)																										
Pulborough to Worthing: 60MI/d																										
Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)																										

Option name	Pevensey SAC	Pevensey Levels Ramsar	Portsmouth Harbour Ramsar	Portsmouth Harbour SPA	Richmond Park SAC	River Clun SAC	River Itchen SAC	River Lambourne SAC	River Usk SAC	River Wye SAC	Rook Cliff SAC	Sandwich Bay SAC	Severn Estuary Ramsar	Severn Estuary SAC	Severn Estuary SPA	Singleton and Cocking Tunnels SAC	Solent & Isle of Wight Lagoons SAC	Solent and Dorset Coast SPA	Solent and Southampton Water Ramsar	Solent and Southampton Water SPA	Solent Maritime SAC	South West London Waterbodies Ramsar	South West London Waterbodies SPA	Stodmarsh Ramsar	Stodmarsh SAC	Stodmarsh SPA
Thames-Lee Tunnel extension from Lockwood PS to King George V Reservoir intake																										
TWRM extension - Hampton to Battersea - Construction																										
New WTW at Kempton - 150MI/d - Construction																										
STT - Pipeline 500MI/d - Construction																										
Groundwater Development - Datchet Existing Source DO Increase																										
Transfer from WTW in Abingdon to SWA - 48MI/d																										
Groundwater Development - Moulsoford Groundwater Source																										
Abingdon Reservoir to Farmoor Reservoir pipeline																										
Romsey Groundwater																										
Didcot Iver 4 Confidential Trading Option																										
Southampton link main																										
Canals & Rivers Trust Slough Slough																										
Brent Reservoir Transfer to Iver																										
Egham to Iver 50MLD (Supply 2040)																										

Option name	Pevensay SAC	Pevensay Levels Ramsar	Portsmouth Harbour Ramsar	Portsmouth Harbour SPA	Richmond Park SAC	River Clun SAC	River Itchen SAC	River Lambourne SAC	River Usk SAC	River Wye SAC	Rook Cliff SAC	Sandwich Bay SAC	Severn Estuary Ramsar	Severn Estuary SAC	Severn Estuary SPA	Singleton and Cocking Tunnels SAC	Solent & Isle of Wight Lagoons SAC	Solent and Dorset Coast SPA	Solent and Southampton Water Ramsar	Solent and Southampton Water SPA	Solent Maritime SAC	South West London Waterbodies Ramsar	South West London Waterbodies SPA	Stodmarsh Ramsar	Stodmarsh SAC	Stodmarsh SPA
Deal Supply Scheme																										
SRN Source D To Havant Thicket: 50MI/d																										
Peacehaven Recycling at Arlington																										
New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth																										
Import from Portsmouth Water (additional 9MI/d)																										
Import from Portsmouth Water																										
Transfer: Havant Thicket reservoir - Otterbourne WSW																										
Desalination: Isle of Sheppey																										
Recycling: Sittingbourne Industrial Reuse																										
Desalination: River Thames estuary																										
Desalination: River Thames estuary Phase 2																										
Import: Havant Thicket - Otterbourne direct raw water transfer																										
Conjunctive Benefit of Budds farm to Havant Thicket																										
Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP																										

Option name	Pevensey SAC	Pevensey Levels Ramsar	Portsmouth Harbour Ramsar	Portsmouth Harbour SPA	Richmond Park SAC	River Clun SAC	River Itchen SAC	River Lambourne SAC	River Usk SAC	River Wye SAC	Rook Cliff SAC	Sandwich Bay SAC	Severn Estuary Ramsar	Severn Estuary SAC	Severn Estuary SPA	Singleton and Cocking Tunnels SAC	Solent & Isle of Wight Lagoons SAC	Solent and Dorset Coast SPA	Solent and Southampton Water Ramsar	Solent and Southampton Water SPA	Solent Maritime SAC	South West London Waterbodies Ramsar	South West London Waterbodies SPA	Stodmarsh Ramsar	Stodmarsh SAC	Stodmarsh SPA
Worthing to Brighton: 40MI/d																										
Recycling: Littlehampton WwTW																										
Havant Thicket To Pulborough WTW																										
Tilmore to Pilborough																										
Outwood To Turners Hill																										
Culham to HWZ(200) Potable - Construction[1]																										
Transfer - SEW to Guildford - Conveyance Element																										
Number of options with the potential to affect the designated site	1	1	5	5	1	1	9	3	1	1	1	1	1	1	1	3	1	6	15	14	14	6	5	5	5	4

Table 3.4: In-combination results of options affecting Designated Sites when listed T-W (inclusive)

Option name	Thames Basin Heaths SPA	Thursley, Ash, Pirbright and Chobham SAC	Thames Estuary and Marshes Ramsar	Thames Estuary and Marshes SPA	Thanet Coast and Sandwich Bay Ramsar	Thanet Coast and Sandwich Bay SAC	Thanet Coast and Sandwich Bay SPA	Thanet Coast SAC	The Mens SAC	The New Forest Ramsar	The New Forest SAC	The New Forest SPA	The Swale Ramsar	The Swale SPA	Wimbledon Common SAC	Windsor Forest and Great Park SAC
Didcot Iver 4 Confidential Trading Option																
New Iver 2 WTW 50 MI/d Phase 1																

Option name	Thames Basin Heaths SPA	Thursley, Ash, Pirbright and Chobham SAC	Thames Estuary and Marshes Ramsar	Thames Estuary and Marshes SPA	Thanet Coast and Sandwich Bay Ramsar	Thanet Coast and Sandwich Bay SAC	Thanet Coast and Sandwich Bay SPA	Thanet Coast SAC	The Mens SAC	The New Forest Ramsar	The New Forest SAC	The New Forest SPA	The Swale Ramsar	The Swale SPA	Wimbledon Common SAC	Windsor Forest and Great Park SAC
New Iver 2 WTW 50 MI/d Phase 2																
Egham LGS																
Hythe Beach Wells RO Desal (brackish water)																
Dover Docks Reservoir - Broomfield Banks Effluent Reuse																
Dover Constraint Removal																
Aldington Flood Storage Area																
Aldington Scale Up	With no information on the proposed locations for additional options, likely significant effects on N2K Sites cannot be identified.															
Western Rother licence and storage programme																
Upgrade Source O Booster to 25Mld																
Works A increased treatment capacity as part of Havant Thicket Development																
Drought Permit: Source S																
Havant Thicket Winter Storage Reservoir - Classic																
Groundwater Licence Trade - Halling																
New Company Transfer: RZ8 to RZ6 Transfer - Canterbury to Maidstone (10 MI/d)																
Desalination at Reculver (30MI/d Option)																

Option name	Thames Basin Heaths SPA	Thursley, Ash, Pirbright and Chobham SAC	Thames Estuary and Marshes Ramsar	Thames Estuary and Marshes SPA	Thanet Coast and Sandwich Bay Ramsar	Thanet Coast and Sandwich Bay SAC	Thanet Coast and Sandwich Bay SPA	Thanet Coast SAC	The Mens SAC	The New Forest Ramsar	The New Forest SAC	The New Forest SPA	The Swale Ramsar	The Swale SPA	Wimbledon Common SAC	Windsor Forest and Great Park SAC
RZ8 Zonal Scheme - [RES-31] - Distribute extra water from Broad Oak																
RZ8 Zonal Scheme - [DES-15] - Transfer of water from Ford WTW																
Broad Oak Reservoir																
Treatment capacity: upgrade Lower Itchen WSW																
HWZ to Otterbourne (200) Potable - Construction																
Drought option: Reduce HoF at Lower Itchen sources (38MI/d)																
Drought option: Candoover Drought Permit/Order (2027-2029 only) (15.4MI/d)																
Test MAR																
Groundwater: Eastern Yar replacement BH (1.5MI/d)																
Transfer: Triplicate cross-Solent main - bi-directional transfer (8MI/d)																
Recycling: Sandown WwTW (8.1MI/d)																
Desalination: East Thanet coast & transfer (20MI/d) Phase 2																
Desalination: East Thanet coast & transfer (20MI/d)																
Otterbourne to Gaters Mill: 45MI/d																
Rye groundwater reconfiguration																

Option name	Thames Basin Heaths SPA	Thursley, Ash, Pirbright and Chobham SAC	Thames Estuary and Marshes Ramsar	Thames Estuary and Marshes SPA	Thanet Coast and Sandwich Bay Ramsar	Thanet Coast and Sandwich Bay SAC	Thanet Coast and Sandwich Bay SPA	Thanet Coast SAC	The Mens SAC	The New Forest Ramsar	The New Forest SAC	The New Forest SPA	The Swale Ramsar	The Swale SPA	Wimbledon Common SAC	Windsor Forest and Great Park SAC
Recycling: Hastings WTW conjunctive use with Darwell reservoir (15.3MI/d)																
Groundwater: Petworth WSW return to service with a new borehole (4.0MI/d)																
Pulborough to Worthing: 60MI/d																
Transfer: Otterbourne WSW - Testwood lakes raw (60MI/d)																
Thames-Lee Tunnel extension from Lockwood PS to King George V Reservoir intake																
TWRM extension - Hampton to Battersea - Construction																
New WTW at Kempton - 150MI/d - Construction																
STT - Pipeline 500MI/d - Construction																
Groundwater Development - Datchet Existing Source DO Increase																
Transfer from WTW in Abingdon to SWA - 48MI/d																
Groundwater Development - Moulsoford Groundwater Source																
Abingdon Reservoir to Farmoor Reservoir pipeline																
Romsey Groundwater																
Didcot Iver 4 Confidential Trading Option																

Option name	Thames Basin Heaths SPA	Thursley, Ash, Pirbright and Chobham SAC	Thames Estuary and Marshes Ramsar	Thames Estuary and Marshes SPA	Thanet Coast and Sandwich Bay Ramsar	Thanet Coast and Sandwich Bay SAC	Thanet Coast and Sandwich Bay SPA	Thanet Coast SAC	The Mens SAC	The New Forest Ramsar	The New Forest SAC	The New Forest SPA	The Swale Ramsar	The Swale SPA	Wimbledon Common SAC	Windsor Forest and Great Park SAC
Southampton link main																
Canals & Rivers Trust Slough Slough																
Brent Reservoir Transfer to Iver																
Egham to Iver 50MLD (Supply 2040)																
Deal Supply Scheme																
SRN Source D To Havant Thicket: 50ML/d																
Peacehaven Recycling at Arlington																
New Bulk Supply: SWS to RZ8 - Brede to Kingsnorth																
Import from Portsmouth Water (additional 9ML/d)																
Import from Portsmouth Water																
Transfer: Havant Thicket reservoir - Otterbourne WSW																
Desalination: Isle of Sheppey																
Recycling: Sittingbourne Industrial Reuse																
Desalination: River Thames estuary																
Desalination: River Thames estuary Phase 2																
Import: Havant Thicket - Otterbourne direct raw water transfer																
Conjunctive Benefit of Budds farm to Havant Thicket																

Option name	Thames Basin Heaths SPA	Thursley, Ash, Pirbright and Chobham SAC	Thames Estuary and Marshes Ramsar	Thames Estuary and Marshes SPA	Thanet Coast and Sandwich Bay Ramsar	Thanet Coast and Sandwich Bay SAC	Thanet Coast and Sandwich Bay SPA	Thanet Coast SAC	The Mens SAC	The New Forest Ramsar	The New Forest SAC	The New Forest SPA	The Swale Ramsar	The Swale SPA	Wimbledon Common SAC	Windsor Forest and Great Park SAC
Recycling: Recharge of Havant Thicket reservoir from Budds Farm and new WRP																
Worthing to Brighton: 40MI/d																
Recycling: Littlehampton WwTW																
Havant Thicket To Pulborough WTW																
Tilmore to Pilborough																
Outwood To Turners Hill																
Culham to HWZ(200) Potable - Construction[1]																
Transfer - SEW to Guildford - Conveyance Element																
Number of options with the potential to affect the designated site	1	1	2	1	5	3	5	3	1	1	1	1	2	2	2	1

4 Best Value Plan (2050-2075)

4.1 Best Value Plan (2050-2075) Options

The Best Value Plan for WRSE contains options that do not start construction until 2050. HRA Stage 1 Screening was undertaken on every option and flagged the requirement for HRA Stage 2 Appropriate Assessment where the potential for likely significant effects were identified. As outlined in Section 2.4, if HRA Stage 2 Appropriate Assessment was required, the results of Stage 2 have been used to inform the in-combination assessment where these have been made available by the water companies. Where they were not made available or not yet undertaken, Stage 1 (Screening) assessments have been used.

Table 4.1 presents the options within the Best Value Plan (2050-2075) that were identified at HRA Stage 1 to have likely significant effects or the potential for adverse effects on site integrity at Stage 2 (see Section 2.4). It also presents the stage of the HRA which was used to inform the in-combination effects assessment.

Table 4.1: Options in the Best Value Plan (2050-2075)

Option Name	Water Company	HRA Stage Used to inform the in-combination assessment
STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)	Thames Water	Stage 2 ⁸
STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 30MI/d (105 MI/d total)	Thames Water	Stage 2
STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 30MI/d (105 MI/d total)	Thames Water	Stage 2
STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 Additional 30MI/d (105 MI/d total)	Thames Water	Stage 2
STT Support - 500 Pipeline - Netheridge	Thames Water	Stage 2
STT Support - 500 Pipeline - Minworth Phase 1	Thames Water	Stage 2 ⁹
STT Support - 500 Pipeline - Minworth Phase 2	Thames Water	Stage 2
Deephams Reuse – 46.5 MI/d, to TLT - Construction	Thames Water	Stage 1
New WTW at Kempton - 100MI/d - Construction	Thames Water	Stage 1

⁸ The HRA Stage 2: Appropriate Assessment results from the RAPID Gate 2 process have been used for the STT options (excluding the Minworth options – see footnote below): STT Solution - Informal Habitats Regulations Assessment Report (Ricardo, 2022). It should be noted that this was an informal HRA and although it identifies no adverse effects on site integrity, these identified to be uncertain at this stage. The in-combination assessment therefore includes them as having likely significant effects given the uncertainty and further work required at Gate 3.

⁹ The HRA Stage 2: Appropriate Assessment results from the RAPID Gate 1 process have been used for the STT Minworth options: Gate-1 submission for Minworth Strategic Resource Option (Affinity Water and Severn Trent Water, 2021). Available at: <https://www.severntrent.com/content/dam/stw-plc/about-us/gate-1-submission-minworth.pdf>. The HRA Appropriate Assessment concluded no adverse effects on site integrity for the Humber Estuary SAC and Ramsar site. It should be noted that this information is available at Gate 1 and may be subject to change as the options progress to Gate 2 and beyond.

4.2 HRA In-combination Assessment findings for Best Value Plan (2050-2075) options

The results of the in-combination assessment are presented in Table 4.2. This assessment suggests the following designated sites may be adversely affected by multiple options, resulting in in-combination effects:

Midland Meres and Mosses Phase 2 Ramsar

Designated site may be affected by:

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d

Assessment:

These feature within Thames Water WRMPs. The construction periods of STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d, STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total), and STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total) overlap between 2050 and 2055, therefore in-combination effects are possible.

River Clun SAC

Designated site may be affected by:

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d
- STT Support - 500 Pipeline - Netheridge

Assessment:

These feature within Thames Water WRMPs. The construction periods of STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d, STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total), STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total), STT Support - 500 Pipeline – Netheridge overlap between 2050 and 2055, therefore in-combination effects are possible.

River Usk SAC

Designated site may be affected by:

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d

- STT Support - 500 Pipeline - Netheridge

Assessment:

These feature within Thames Water WRMPs. The construction periods of STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d, STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total), STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total), STT Support - 500 Pipeline – Netheridge overlap between 2050 and 2055, therefore in-combination effects are possible.

River Wye SAC

Designated site may be affected by:

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d
- STT Support - 500 Pipeline - Netheridge

Assessment:

These feature within Thames Water WRMPs. The construction periods of STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d, STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total), STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total), STT Support - 500 Pipeline – Netheridge overlap between 2050 and 2055, therefore in-combination effects are possible.

Severn Estuary Ramsar

Designated site may be affected by:

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d
- STT Support - 500 Pipeline - Netheridge

Assessment:

These feature within Thames Water WRMPs. The construction periods of STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d, STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total), STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total), STT Support - 500 Pipeline – Netheridge overlap between 2050 and 2055, therefore in-combination effects are possible.

Severn Estuary/ Mor Hafren SAC

Designated site may be affected by:

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d
- STT Support - 500 Pipeline - Netheridge

Assessment:

These feature within Thames Water WRMPs. The construction periods of STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d, STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total), STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total), STT Support - 500 Pipeline – Netheridge overlap between 2050 and 2055, therefore in-combination effects are possible.

Severn Estuary SPA

Designated site may be affected by:

- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)
- STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d
- STT Support - 500 Pipeline - Netheridge

Assessment:

These feature within Thames Water WRMPs. The construction periods of STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d, STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total), STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total), STT Support - 500 Pipeline – Netheridge overlap between 2050 and 2055, therefore in-combination effects are possible.

At this stage in the options design, it is not possible to identify and quantify in more detail the potential in-combination effects on the designated sites. In the next stages of the option development the identified options will undertake a more in-depth analysis of the potential effects and detail specific mitigation measures.

Table 4.2: In-combination results for WRSE Best Value Plan options scheduled from 2050-2075

Option	Lee Valley Ramsar	Lee Valley SPA	Midland Meres and Mosses Phase 2 Ramsar	Mole Gap to Reigate Escarpment SPA	River Clun SAC	River Usk SAC	River Wye SAC	Seven Estuary Ramsar	Severn Estuary/ Mor Hafren SAC	Severn Estuary SPA	South West London Waterbodies Ramsar
STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 4 Additional 30MI/d (105 MI/d total)											

STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 2 Additional 35MI/d (60 MI/d total)											
STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 3 Additional 15MI/d (75 MI/d total)											
STT Support for 500 MI/d Pipeline interconnector - Vyrnwy Phase 1 25MI/d											
STT Support - 500 Pipeline - Netheridge											
STT Support - 500 Pipeline - Minworth Phase 1											
STT Support - 500 Pipeline - Minworth Phase 2											
Deephams Reuse – 46.5 MI/d, to TLT - Construction											
New WTW at Kempton - 100MI/d - Construction											
The number of options with the potential to affect the designated site	1	1	4	1	5	5	5	5	5	5	1

5 Conclusion

5.1 Summary

This report includes an assessment of potential in-combination effects on designated sites due to the implementation of the options within the Draft Regional Plan.

Mitigation measures have been detailed within the HRA undertaken for each WRMP option and therefore not included here (for options where a Stage 2 Appropriate Assessment has been undertaken). It is assumed that for all options best practice standard mitigations measures will be used during options construction and operation phases as appropriate. This assumes a worst-case scenario at this stage, in the absence of detailed survey data or local records. The receipt of additional data for each option may provide evidence that there will be no adverse effects on designated sites due to in-combination effects. This includes completion of several studies that were recommended as part of the specific options HRAs.

The following sites may be adversely affected by the implementation of the Draft Regional Plan as they are affected by more than one option:

Designated Sites affected by two or more Best Value Plan Options (Pre-2050) during construction and/or operation

- Arun Valley SAC
- Arun Valley Ramsar
- Arun Valley SPA designated
- Blean Complex SAC
- Chichester and Langstone Harbours SPA
- Chichester and Langstone Harbours Ramsar
- Cothill Fen SAC
- Dover to Kingsdown Cliffs SAC
- Duncton to Bignor Escarpment SAC
- Dungeness SAC
- Dungeness, Romney Marsh and Rye Bay Ramsar
- Dungeness, Romney Marsh and Rye Bay SPA
- Kennet and Lambourne Floodplain SAC
- Kennet Valley/ Alderwoods SAC
- Kingley Vale SAC
- Lee Valley Ramsar/SPA
- Medway Estuary and Marshes SPA/Ramsar
- Mole Gap to Reigate Escarpment SAC
- Portsmouth Harbour Ramsar
- Portsmouth Harbour SPA
- River Itchen SAC

- River Lambourne SAC
- Singleton and Cocking Tunnels SAC
- Solent and Dorset Coast SPA
- Solent and Southampton Water Ramsar
- Solent and Southampton Water SPA
- Solent Maritime SAC
- South West London Waterbodies Ramsar
- South West London Waterbodies SPA
- Stodmarsh Ramsar/SAC
- Stodmarsh SPA
- Thames Estuary and Marshes Ramsar
- Thanet Coast and Sandwich Bay Ramsar/SPA
- Thanet Coast and Sandwich Bay SAC
- Thanet Coast SAC
- The Swale Ramsar/SPA
- Wimbledon Common SAC

Designated Sites affected by two or more Best Value Plan Options (2050-2075) during construction and/or operation

- Midland Meres and Mosses Phase 2 Ramsar
- River Clun SAC
- River Usk SAC
- River Wye SAC
- Severn Estuary Ramsar
- Severn Estuary/ Mor Hafren SAC
- Severn Estuary SPA

5.2 Next steps

At this stage in the options design, it is not possible to identify and quantify in more detail the potential in-combination effects on the designated sites. As each WRMP develops and more information becomes available this assessment will need to be reviewed.

This report will be issued for consultation with the relevant nature conservation authorities and the public. However, it should be read in conjunction with the individual water companies WRMP24 HRA Reports. Further design iterations will require revisions to this document and may result in changes to the assessment.