Water Resources Management Plan 2019 Annex 16: Water Framework Directive Assessment

Main Report

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Version 1





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1. Introduction

1.1 Background and purpose of Water Framework Directive assessment

Water companies in England and Wales are required to produce a Water Resources Management Plan (WRMP) every five years. The plan sets out how the company intends to maintain the balance between supply and demand for water over the long-term planning horizon in order to ensure security of supply in each of the water resource zones making up its supply area.

As part of the development of this plan, this Water Framework Directive (WFD) assessment considers the potential effects of alternative options and programmes on WFD objectives. The WFD assessment has been undertaken in parallel with the Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA) to ensure an integrated approach to environmental assessment and has been used to inform the development of the WRMP19 to ensure its overall compliance with relevant legislation. Figure 1 and Figure 2 show the overall process for integrating WFD assessment into the development of the WRMP19.

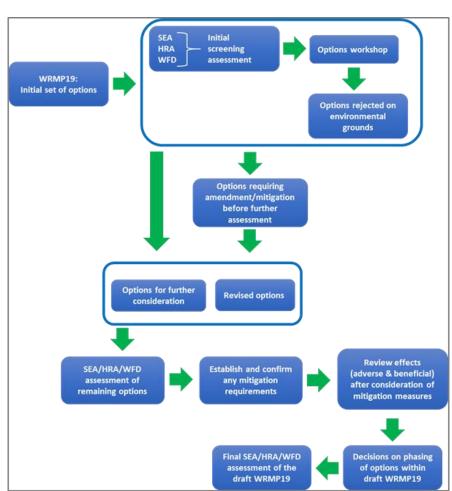


Figure 1 Integration of the WFD assessment into the WRMP process

A high-level screening process was carried out of the unconstrained list of options to rule out options with likely high risks of WFD status deterioration. For example, a Medway estuary tidal barrage option was rejected due to a high risk of WFD status deterioration to the Medway WFD transitional water body (see Annex 7). Further screening of the constrained list of options was carried out, resulting in several options being rejected due to higher risks of deterioration in WFD status (for



example, a desalination scheme in the Stour estuary and an indirect potable reuse scheme on the River Test). This process is detailed further in Annex 6 Options Appraisal and Annex 14 Strategic Environmental Assessment. All of the remaining feasible options were then subject to more detailed screening as set out in this report, and where screened in, subject to the full WFD assessment process. Findings from the feasible options WFD assessment have been used to inform decision-making on the options to be included in the WRMP19 and also informed the Strategic Environmental Assessment (Annex 14) of options and the preferred strategies for each of Southern Water's three operational areas.

In parallel to the assessment of WRMP options, Southern Water has also taken account of the risk of deterioration of WFD status of its existing water sources, including reference to the dialogue with the Environment Agency in relation to the future sustainability of existing water source abstractions in respect of the WFD 'no deterioration' objective. As well driving potential sustainability reductions to be considered within the WRMP development, Southern Water has also assessed whether any new WRMP options may be more favourable in respect of WFD objectives and/or wider environmental performance measures than existing water sources. This is detailed in Annex 14 Strategic Environmental Assessment.

This document outlines the approach adopted and reports the findings from the WFD compliance assessment of WRMP options and programmes. The assessment involves the consideration of the likely impacts of both construction and operation of each WRMP option on WFD requirements alone and in combination with other options, programmes and plans. In particular, consideration has been given in the assessments as to whether there is a risk of deterioration in water body status between the status classes of any given WFD element. The assessment methodology was issued for consultation to the Environment Agency and wider stakeholders in 2016.



Figure 2 Integration of the WFD assessment into the development of the Water Resource Management Plan.

FEASIBLE OPTIONS ASSESSMENT

Water Framework Assessment

Will the option lead to deterioration of water body status or hinder achievement of Good status?

Strategic Environmental Assessment

Beneficial & adverse effects of each option assessed against a broad range of environmental & social topics (e.g. biodiversity, heritage, health)

Habitats Regulations Assessment

Will the option lead to Likely Significant Effects on European designated sites? Programme appraisal to develop 'best value' programme of options for each Water Resource Zone

BEST VALUE PROGRAMME ASSESSMENT

Water Framework Assessment

Will the programme lead to deterioration of water body status or hinder achievement of Good status?

Strategic Environmental Assessment

Beneficial & adverse effects of the programme assessed against a broad range of environmental & social topics (e.g. biodiversity, heritage, health)

Habitats Regulations Assessment

Will the programme lead to Likely Significant Effects on European designated sites?

PLAN LEVEL ASSESSMENT

Water Framework Assessment

Will the WRMP lead to deterioration of water body status or hinder achievement of Good status?

Strategic Environmental Assessment

Water Resource Plan

for the Southern

Water supply area

Beneficial & adverse effects of the WRMP assessed against a broad range of environmental & social topics (e.g. biodiversity, heritage, health)

Habitats Regulations Assessment

Will the WRMP lead to Likely Significant Effects on European designated sites?

1.2 WFD requirements for WRMP

The requirements for a WFD compliance assessment of a water company WRMP are explained in the Water Resources Planning Guideline (WRPG)¹ (Box 1).

Box 1: WRPG 2018

Water Framework Directive Assessment of a WRMP (Section 6.11 Water Framework Directive)

"You must take account of the **requirements of the WFD**, including the legally binding **environmental objectives in the river basin management plans**, when considering your proposed solution(s). You should consider solutions that promote the requirements of Article 7 of WFD (that seeks, as a minimum, to **prevent deterioration of water with the aim of reducing the treatment needed to produce drinking water**) and look to work in partnership with others. You should review solutions that have been identified in RBMP and this may require partnership working with others in the catchment to achieve the solution.

You should confirm that there is **no risk of deterioration from a potential new abstraction or from increased abstraction** at an existing source before you consider it as a **feasible option**. In addition, you should ensure that **any options do not prevent the achievement of good status (or potential)**. You should talk to the Environment Agency or Natural Resources Wales about any intended actions that may cause deterioration of status (or potential) or prevent the achievement of the water body status objectives in the river basin management plans or for new modifications the achievement of good status (or potential). You should do this as soon as possible before developing your plan and you should make a clear statement in your plan about any potential impacts.

Your plans should include targeted and cost-effective **implementation of restoration measures required at the catchment scale**, either working solely or in partnership with other catchment-based organisations. Given the uncertainty over the level of confidence you should consider the principles of adaptive management, with associated pre and post project monitoring."

These WRPG requirements reflect Defra's Guiding Principles for Water Resources Planning (Defra, 2016) which state that companies should take account of the government's objectives for the environment "including the appropriate parts of the EU Water Framework Directive". Defra also expects that companies will:

- Have regard to River Basin Management Plans (RBMPs) and their objectives when making decisions that could affect the condition of the water environment
- Ensure that current abstractions and operations, as well as future plans support the achievement of environmental objectives and measures set out in RBMPs
- Ensure plans:
 - prevent deterioration in water body status
 - support the achievement of protected area and species objectives
 - support the achievement of water body status objectives

¹ Environment Agency and Natural Resources Wales (2018). Water Resources Planning Guideline: Interim update July 2018



Continue working with the Environment Agency to take a proportionate and evidence based approach to identify the changes needed to current abstraction licences to meet environmental requirements

Both WRPG and the Defra Guiding Principles refer to ensuring 'no deterioration' of water body status. The European Court of Justice (ECJ) ruling in 2015 clarified that 'no deterioration' in relation to the WFD means a deterioration between a whole 'status class' (e.g. 'good', 'moderate', etc.) of one or more of the relevant 'quality elements' (e.g. biological, physico-chemical, etc.). This definition applies equally to Artificial Water Bodies (AWB) and Heavily Modified Water Bodies (HMWB) in respect of the relevant quality elements that relate to the defined uses of these water bodies. The ECJ ruling further states that if the quality element concerned is already in the lowest class, any deterioration of that element constitutes a deterioration of the status.

References to 'no deterioration' in this WFD assessment align to this ECJ ruling.



2. WFD assessment approach

2.1 Methodology

2.1.1 Sequential process

The WFD assessment findings were actively used by Southern Water in determining the 'best value' programme of options for each water resource zone. Where options were selected for inclusion in the 'least cost' strategy for each water resource zone following programme appraisal modelling, a further review was carried out of each option, both alone and in combination with any other option, so as to ensure that the strategy was compliant with key WFD objectives.

A sequential 5-stage process for undertaking WFD compliance assessments has been applied as follows in line with the methodology published by the company in 2016, as illustrated in Figure 3. The 5 stages are numbered in Figure 3 and outlined below.

1. WFD compliance assessment screening Possible risk to No risk to WFD compliance WFD compliance 2. WFD compliance assessment at a waterbody scale

Figure 3 WRMP WFD compliance assessment steps

All options included in feasible list

4. Preferred programme review of WFD compliance and cumulative assessment of options

3. Consolidation of assessment of options

5. In-combination assessment with other plans and programmes

A sequential 5-stage process for undertaking WFD compliance assessments has been applied as follows in line with the methodology published by the company in 2016:

WFD compliance assessment screening: involves a preliminary assessment of each option and identifies whether there may be any risk of deterioration in WFD status. This is based on expert judgement. Where an option is found to pose a potential risk of WFD deterioration,



- the option is flagged for further WFD compliance assessment. This step of the assessment is reported in **Appendix A**
- WFD compliance assessment: This involves assessment of the likely changes to hydromorphology and water quality occurring as a result of the construction or operation of the option and the possible risks to WFD status. In addition, the potential effects on WFD protected areas are assessed. This step of the assessment is reported in Appendix B (for options included in the preferred plan) and Appendix C (for feasible options not included in the preferred plan)
- Option level WFD compliance assessment: This involves summarising WFD compliance assessments of each of the options on the feasible list (from Steps 1 and 2) as set out in the Section 3 of this report
- Preferred programme WFD compliance statement. This involves a statement of the compliance of the preferred programme against each of the WFD compliance objectives set out in Section 4 of this report. This involves assessment of the set of options within the programme, both alone and in combination with other options within the programme. The assessment is also used to identify where multiple options potentially impact on the same WFD water body, and potentially downstream water bodies where appropriate.
- In-combination assessment of the preferred programme with those of other water companies WRMP19 as well as other plans and projects is included in the Environmental Report of the Strategic Environmental Assessment. This step of the WFD assessment is reported in Section 5 of this report

2.1.2 WFD compliance objectives

The fundamental environmental objectives of the WFD are to attain good ecological status and prevent deterioration of the status of designated water bodies. These objectives are set down in Article 4 of the WFD. Any new development (as well as existing operations) must ensure that these WFD objectives are not compromised. Article 4 on environmental objectives has been interpreted and further developed in Environment Agency (Environment Agency, 2016a and Environment Agency 2017), Defra/Environment Agency (Defra and Environment Agency, 2009), Department of Environment Northern Ireland (Department of the Environment Northern Ireland 2012) and Environment Agency and Natural Resources Wales (2018) to give a series of objectives based on Article 4 of the WFD. These have been developed for the WFD assessment of this plan when considering options, programmes or the Plan as a whole:

- Objective 1: To prevent deterioration between status classes of any water body
- Objective 2: To prevent the introduction of impediments to the attainment of Good WFD status or potential for the water body. It is noted that for some water bodies, it is accepted that achievement of Good status or potential is currently technically infeasible or disproportionately costly. Where this is the case, the test is applied to the currently agreed objectives for that water body rather than against Good status/potential
- Objective 3: To ensure that the planned programme of measures in the RBMP to help attain the WFD objectives for the water body (or the environmental objectives in the 2015 RBMPs) are not compromised
- Objective 4: To ensure the achievement of the WFD objectives in other water bodies within the same catchment are not permanently excluded or compromised

Two further objectives were included to assess whether an option, programme or the Plan assists the meeting of WFD objectives, which is over and above a test of WFD compliance:

- Objective 5: To assist the attainment of the WFD objectives for the water body
- Objective 6: To assist the attainment of the objectives for associated WFD protected areas

Objective 5 has been added to indicate whether the option actually assists with attaining WFD water body objectives, whilst acknowledging that no water resource scheme is under any obligation to do



so. Objective 6 has been added based on the specific requirement of the WRPG. A "negative" answer to testing of Objectives 5 or 6 does not indicate that the option has an adverse WFD compliance assessment but does inform the assessment of that option relative to other options.

2.2 Supporting information and data used

Information on the design, construction and operation of the options was obtained from the relevant fact files. The WFD status and water body information has been obtained from the Environment Agency (Environment Agency, 2016b) online Catchment Data Explorer for RBMP2 for the year 2015. Water body protected areas linkages were also obtained from the Environment Agency's online Catchment Data Explorer, these include:

- Bathing Water Directive: Bathing waters
- Drinking Water Directive: Drinking water protected area
- Conservation of Wild Birds Directive: water dependent Special Protection Areas (SPAs)
- Habitats Directive: water dependent Special area of Conservations (SACs)
- Shellfish Directive²: Shellfish waters
- Nitrates Directive: Nitrate Vulnerable Zones
- Urban Waste Water Treatment Directive: Nutrient sensitive area or eutrophication sensitive area

² The Shellfish Directive 2006/113/EC was repealed by the Water Framework Directive 2000/60/EC in 2013. The shellfish waters protected areas are waters designated by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2003 as amended. The aim is to protect and improve water quality, to support the growth of healthy shellfish (bivalve and gastropod molluscs) and contribute to good quality edible shellfish.



3. Summary of WFD compliance assessment for feasible options

This section presents a summary of the option WFD compliance assessment for all options included in the feasible list, according to Steps 1 and 2 highlighted in Section 2.1.

All of the catchment management schemes and demand management options were screened out for full WFD compliance assessment as they were assessed as having no adverse effects on WFD objectives and potentially having beneficial effects on WFD objectives by improving the local water environment through land-use management and reducing the growth in demand for water.

Drought options were also screened out of WFD assessment as the potential risk of deterioration to WFD waterbodies arising as a consequence of their implementation was fully assessed as part of Southern Water's Drought Plan.

Temporary effects due to short-duration activities like construction or maintenance do not count as deterioration if the water body would recover in a short time without any restoration measures (Environment Agency, 2016a). Where an option was assessed as having the potential to adversely impact on WFD water bodies during the construction phase and it can be mitigated through the implementation of construction best-practice, the risk of deterioration between WFD status classes is considered as negligible. Therefore, options only involving temporary impacts relating to construction activities were not assessed further as part of the second stage of the WFD compliance assessment.

The majority of the screened-out options involve transfers of water by new or existing pipelines or abstractions from confined aquifers and therefore posing a negligible risk of deterioration to any WFD water bodies (**Appendix A**). A number of options screened out in Appendix A are bulk transfers from neighbouring water companies and have been screened out from further WFD assessment, this being undertaken by the donor company. The remaining supply-side options were assessed in more detail for WFD compliance (**Appendices B and C**).

Most feasible options were assessed as being compliant with WFD objectives, however, there were some uncertainties in the assessments as follows:

- Groundwater abstractions (2 schemes): the uncertainties related to understanding the level of hydraulic connectivity between the groundwater sources and potential groundwaterdependent rivers and/ or groundwater dependent terrestrial ecosystems (GWDTE). One of these schemes (West Chiltington groundwater scheme) is included in the WRMP19 strategy and is discussed further in the 'Preferred programme WFD compliance statement' section
- Desalination (6 schemes): the uncertainties related to understanding the impact on estuaries and how that may affect aquatic ecology and/ or the impact of the brine discharge. None of these schemes were selected for the WRMP19 strategy, however one is included as a strategic alternative (Tidal River Arun Desalination (10Ml/d))
- Wastewater reuse (4 schemes): the uncertainties related to the impact of increased flows in the receiving rivers during times of low flows. One of these schemes (Sandown WwTW Indirect Potable Reuse scheme) is included in the WRMP19 strategy and is discussed in the 'Preferred programme WFD compliance statement' section. Two schemes are included as strategic alternatives; Itchen Indirect Water Reuse (Portsmouth Harbour and Fareham WwTW Indirect Potable Water Reuse (90Ml/d) and Woolston and Portswood WwTW Indirect Potable Water Reuse (20.5Ml/d)



In addition, information provided by South West Water on the Bournemouth Water bulk supply transfer option for the Western Area indicated that further WFD investigations would be necessary as part of the more detailed development of the scheme, as agreed with the Environment Agency.

We are not aware that there are any other WFD risks associated with the abstraction of water in relation to other water company bulk supply transfer options considered in our plan and none have been identified by the donor companies in their draft WRMP19 assessments. The WFD risk assessment for the abstraction is the responsibility of the donor water company but we will continue to liaise with the relevant donor companies on ensuring WFD compliance for those bulk water supply transfer schemes included in our preferred programme.



4. Preferred programme and strategic alternatives WFD compliance statement

This section summarises the compliance outcomes for those strategies which were selected as part of the preferred as well as alternative programmes. Where options were identified as having a risk of WFD status deterioration, these options were discussed as part of the development of the final 'best value' plan for each water resource zone. Where feasible, options with risks of WFD status deterioration were removed from further consideration in the final programme appraisal modelling. Where, however, risks to the supply-demand balance necessitated the inclusion of the option(s) in the 'best value' plan, the WFD risks have been clearly identified and additional mitigation measures have been considered as discussed below. The WFD compliance assessment has concluded for the WRMP19 preferred programme (Table 1) that:

- With the exception of two options (set out below), none of the individual options or the preferred programmes for each operational area would lead to deterioration of water body status or prevent them from achieving good status and are therefore compliant with Objectives 1 and 2 for the WFD
- The assessment indicated uncertainty as to the magnitude of effects on WFD water bodies for two of the options included in the WRMP19 strategies, and therefore a risk of noncompliance with Objective 1 (risk of deterioration in status of the water body):
 - The West Chiltington groundwater abstraction option assessment indicated that, adopting a precautionary approach, a potential for impacts on one WFD river water body and a groundwater dependent terrestrial ecosystem (GWDTE). The historic operation of the boreholes did not result in any concerns about adverse effects on the Site of Special Scientific Interest (SSSI) or the River Chilt and for this reason, although there is insufficient objective evidence currently available, we believe the option will be compliant once the proposed investigations are completed to provide that evidence
 - Further assessment of the hydrogeological connectivity between the groundwater source and these dependant ecosystems is proposed to confirm the magnitude of any potential impact during operation. These investigations will take place as part of the WINEP3 WFD no-deterioration investigations already agreed with the Environment Agency and scheduled for completion by 2022. We will work with the Environment Agency and Natural England over the coming months to agree the precise scope of these investigations, which may include groundwater modelling and/or pump test surveys.
 - These investigations will support the development of any mitigation measures that may be required in the event that WFD status deterioration and/or adverse effects on the GWDTE SSSI site are identified. Mitigation measures could involve some additional volumetric and/or groundwater level constraints on the existing abstraction licence to protect surface water features or possibly some in-stream (River Chilt) or wetland (GWDTE) restoration measures to enhance the resilience of these water bodies to any identified effects of groundwater abstraction
 - Sandown WTW Indirect Potable Reuse option assessment indicated a potential for impacts on the flow regime of one WFD river water body. Further assessment is necessary in order to ascertain the magnitude of impacts on ecological receptors, as a consequence of flow regime alterations during the operation of the scheme. We will work with the Environment Agency and Natural England over the coming months to agree the specific scope of investigations and/or surveys to assess the risks in more detail, in particular in respect of the effect of changes to the low flow regime and water quality from increased flow augmentation of the River Eastern Yar. These investigations will be completed by 2021 at latest and will inform the development of any required mitigation measures these could include operational controls to reduce the volume of discharge relative to actual river flow and possibly treatment processes to manage the temperature of the effluent relative to the ambient river water temperature if required.



In addition, South West Water has advised that for the Bournemouth Water bulk supply transfer option it will be carrying out a WFD risk of status deterioration study as has already been discussed as part of the West Country Water Resources Group with the Environment Agency. We will liaise with South West Water on their investigations which will need to be completed by 2020 at latest. These investigations will inform the development of any mitigation measures associated with the increased abstraction (within existing licence limits).

With respect to the other WFD compliance objectives, the following assessment conclusions have been reached:

- The effect of each option individually on downstream water bodies, together with consideration of any further water bodies arising at the programme level has been included within the compliance assessment of Objectives 1-4 above
- None of the proposed options in the WRMP19 strategies (with the exception of catchment management, river restoration and demand management options) contribute to the attainment of good status or good potential objectives for any water bodies. With the inclusion of catchment management, river restoration and demand management options in the WRMP19 strategies, the plan should help assist the attainment of the WFD objectives for some water bodies (Objective 5 of the WFD assessment test)
- None of the proposed options in the WRMP19 strategies (with the exception of catchment management, river restoration and demand management options) contribute to the attainment of objectives for WFD protected areas. With the inclusion of catchment management, river restoration and demand management options in the WRMP19 strategies, the plan should help assist the attainment of the WFD objectives for some Protected Areas (Objective 6 of the WFD assessment test), for example the river restoration scheme for the River Itchen SAC

For the two schemes identified as uncertain in respect to WFD compliance, our plan includes strategic alternative schemes that could be developed should the investigations summarised above conclude there would be a risk of WFD status deterioration. For the West Chiltington source, if the volume of abstraction needed to be reduced from this source as part of any mitigation measures, the alternative option would be to develop another stage of our Pulborough winter transfer scheme (IZT-Har1 option assessed in Appendix A). For the Sandown WTW Indirect Potable Reuse option, the alternative would be the Sandown desalination scheme (DES_San9) option (assessed in Appendix B).

The WFD compliance assessment has been applied to all of the strategic alternative options included in the WRMP19. The assessment of these alternative options concluded (Table 1) that four options have a potential risk of causing WFD deterioration to one WFD waterbody:

- The Brighton WTW Indirect Potable Reuse scheme (10MI/d) presents a potential risk of WFD deterioration to one WFD river water body, linked to increases in the flow regime and potentially water temperature and the associated potential impacts on macroinvertebrates and macrophytes within a short reach of the water body. If this alternative scheme was required to be developed, further investigations would be required to assess these potential impacts in more detail, and if necessary develop appropriate mitigation measures if a WFD status deterioration risk was confirmed. Mitigation measures could include operational controls to reduce the volume of discharge relative to actual river flow and possibly treatment processes to manage the temperature of the effluent relative to the ambient river water temperature if required.
- Tidal River Arun desalination (10Ml/d) presents a potential risk of WFD deterioration to the Arun waterbody, linked to the uncertainties regarding the abstraction regime and timings of the abstraction, and the potential impacts on fish and macroinvertebrates (not assessed as part of RBMP2) for a short reach of the intertidal waterbody. Mitigation may be available in



- the form of intake screens and avoiding abstraction at low tide, however if this alternative scheme was required, further investigations would be needed to assess the potential impacts in more detail and develop appropriate mitigation.
- The two Itchen indirect water reuse schemes (Option 1:combined Portsmouth Harbour and Fareham WTWs indirect potable reuse scheme (90Ml/d), Option 2: combined Woolston and Portswood WwTWs indirect potable reuse scheme (20.5Ml/d)) present a potential risk of WFD deterioration to the River Itchen WFD river water body, linked to increases in the flow regime and potentially water temperature and the associated potential impacts on fish, macroinvertebrates and macrophytes within a short reach of the water body (depending on the final location of the discharge outfall as part of the detailed design). If either of these alternative schemes were required to be developed, further investigations would be required to assess these potential impacts in more detail, and if necessary develop appropriate mitigation measures if a WFD status deterioration risk was confirmed. Mitigation measures could include operational controls to reduce the volume of discharge relative to actual river flow and possibly treatment processes to manage the temperature of the effluent relative to the ambient river water temperature if required.
- The remaining strategic alternative options have been assessed as WFD compliant (see Table 1)

Table 1 WFD assessment summary for schemes included in the WRMP19 and strategic alternative schemes

			WFD Complia	nce
Option name	Option ID	Operational Area	Assessment	Reason for option not being confirmed as compliant
Preferred programme				
SEW bulk supply near Canterbury	BS_Win	Eastern area	Compliant	
West Sandwich & Sandwich WSW licence variation	GWA_Fle	Eastern area	Compliant	
Utilise full existing transfer capacity (from Faversham)	IZT_Sel3	Eastern area	Compliant	
Medway WTW Indirect Potable Water Reuse (18Ml/d)	PWR_Ecc18	Eastern area	Compliant	
Recommission Meopham greensand groundwater source	BR_LuG	Eastern area	Compliant	
Stourmouth WSW (10Ml/d with 20Ml covered storage)	SWA_Plu10	Eastern area	Compliant	
ASR (Sussex Coast - Lower Greensand)	ASR_SCL1	Central area	Compliant	
Transfer to Midhurst WSW & Petersfield BH rehabilitation	BR_Rog	Central area	Compliant	
Scheme to bring West Chiltington back into service	BR_Smo	Central area	Uncertain	Uncertainty surrounding hydrogeological linkage with nearby river and a wetland habitat
Coastal Desalination - Shoreham Harbour (10Ml/d)	DES_Sho10	Central area	Compliant	
Pulborough groundwater licence variation	LV_Har	Central area	Compliant	



			WFD Complian	псе
Option name	Option ID	Operational Area	Assessment	Reason for option not being confirmed as compliant
Winter transfer Stage 2: New main Shoreham/North Shoreham and Brighton A	IZT_Har2	Central area	Compliant	Note: this option involves no change to existing abstraction licence conditions (see also Appendix A)
Littlehampton WTW Indirect Potable Water Reuse (20Ml/d)	PWR_For20	Central area	Compliant	
Import from Bournemouth Water	BS_Kna	Western area	Compliant	
Additional import from Portsmouth Water (additional 9MI/d)	BS_PWC1	Western area	Compliant	
Additional import from Portsmouth Water (Havant Thicket reservoir development)	BS_PWC2	Western area	Compliant	
Fawley Desalination Modular to 75MI/d	DES_Faw75	Western area	Compliant	
WSW near Cowes - reinstate & additional treatment	GWA_Bro	Western area	Compliant	
Sandown WwTW Indirect Potable Reuse (8.5Ml/d)	PWR_SEY9	Western area	Uncertain	Uncertainty surrounding the effect of increased flows and possible temperature effects on aquatic ecology
Southampton link main (reversible link HSW-HSE)	WTW_Tot1	Western area	Compliant	
Hampshire grid (reversible link HSE-HW)	IZT_OAN1	Western area	Compliant	
Hampshire grid (reversible link HW-HA)	IZT_OAN2	Western area	Compliant	
Romsey Town and Broadlands valve (HSW-HR reversible)	IZT_Rom & IZT_Bro	Western area	Compliant	
Newbury WSW asset enhancement	AE_EWo	Western area	Compliant	
Strategic Alternative Schemes				
Sittingbourne Industrial Water Reuse	IWR_Sit8	Eastern	Compliant	
Coastal desalination – Shoreham Harbour (up to 30MI/d)	DES_Sho	Central	Compliant	
Tidal River Arun Desalination	DES_Aru	Central	Uncertain	Uncertainty surrounding effect of abstraction on macroinvertebrates and fish
Brighton WTW Indirect Potable Reuse (10Ml/d)	PWR_WRE	Central	Uncertain	Uncertainty surrounding the effect of increased river flows and possible



			WFD Compliar	nce
Option name	Option ID	Operational Area	Assessment	Reason for option not being confirmed as compliant
				temperature effects on aquatic ecology
Winter transfer Stage 2: turbidity/sludge handling process improvements at Pulborough	IZT_Har1	Central	Compliant	
Fawley desalination (modular 75-100Ml/d)	DES_FawM100	Western Area	Compliant	
Sandown coastal desalination IOW (8.9Ml/d)	DES_San9	Western Area	Compliant	
Itchen indirect water reuse: Combined Portsmouth Harbour and Fareham WwTWs to River Itchen Indirect Potable Reuse (90Ml/d)	PWR_BPC90	Western Area	Uncertain	Uncertainty surrounding the effect of increased river flows and possible temperature effects on aquatic ecology
Itchen indirect water reuse: Woolston and Portswood WwTW Indirect Potable Reuse (20.5Ml/d)	PWR_WPI	Western Area	Uncertain	Uncertainty surrounding the effect of increased river flows and possible temperature effects on aquatic ecology
Test Estuary WTW Industrial reuse (9MI/d)	IWR_SCM9	Western area	Compliant	
Woodside transfer valve (HSW to HSE)	IZT_Woo	Western Area	Compliant	

The potential for cumulative effects between each option in the preferred programme of the WRMP has also been assessed. e implemented, potential additional cumulative effects have been identified to the Southampton Water WFD transitional water body as a result of the implementation of both the Fawley desalination scheme and Test Estuary industrial reuse option. The assessment for this is summarised in Table 3. No other cumulative effects from the strategic alternatives have been identified. The Portsmouth Harbour and Fareham WwTW indirect potable reuse scheme, or Woolston and Portswood WwTW indirect potable reuse scheme, would be an alternative to the Fawley desalination scheme. The larger Fawley desalination plant would be an alternative to the Bournemouth bulk supply option or any reduced deployable output benefit from the Portsmouth Water bulk supply options.

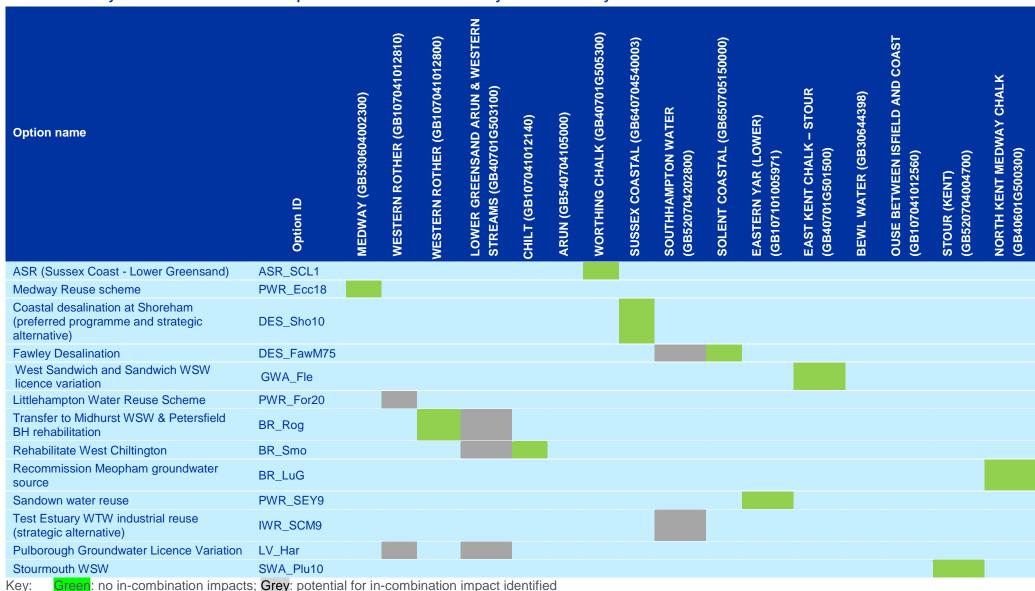


Table 2 lists the preferred strategies which have been taken forward for further WFD assessment, and those waterbodies which they may have an impact on. This has facilitated the identification of potential in-combination impacts, where two or more strategies impact the same waterbody. The findings from this cumulative assessment are summarised Table 3.

In the event that the alternative strategic options are implemented, potential additional cumulative effects have been identified to the Southampton Water WFD transitional water body as a result of the implementation of both the Fawley desalination scheme and Test Estuary industrial reuse option. The assessment for this is summarised in Table 3. No other cumulative effects from the strategic alternatives have been identified. The Portsmouth Harbour and Fareham WwTW indirect potable reuse scheme, or Woolston and Portswood WwTW indirect potable reuse scheme, would be an alternative to the Fawley desalination scheme. The larger Fawley desalination plant would be an alternative to the Bournemouth bulk supply option or any reduced deployable output benefit from the Portsmouth Water bulk supply options.



Table 2 Summary of in-combination WFD compliance risks for the WRMP19 by WFD water body



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Table 3 In-combination WFD compliance assessment between options included in the WRMP19 preferred programme and strategic alternatives

Water Body Receptor	Option	Assessment of Potential for Cumulative Effects	Risk Rating (RAG)
Southampton Water GB520704202800	Test Estuary WTW industrial reuse (9Ml/d): In use 2065 Fawley Desalination (75Ml/d): In use 2027	Identifying sources: Test Estuary WTW industrial reuse involves the re-direction of 9Ml/d of treated effluent discharge from the Test Estuary (part of Southampton Water transitional water body) to provide 9Ml/d of industrial water supply. The proposed discharge point of the Fawley Desalination scheme to the Solent is situated approximately 1.5km to the west of the mouth of Southampton Water. *Potential environmental change and predicted response to change:* As identified by the WFD assessment, the Test Estuary WTW industrial reuse scheme has a low risk of adverse impacts to flows in Southampton Water, as a consequence of a 9M/d reduction in treated effluent discharge and is likely to have a small beneficial effect on nutrient loading to the Test Estuary/Southampton Water. The reduction in flow occurs in a narrow stretch of the Test Estuary: whilst there is the potential for a very small localised impact on invertebrates and fish, this would not extend beyond this local area into the wider Southampton Water transitional water body and not in any proximity to any effects arising from the Fawley Desalination discharge. The results of far field salinity modelling of the Fawley Desalination discharge indicated that it is highly unlikely that a hypersaline plume originating in The Solent would lead to any elevated salinity concentrations in Southampton Water of a magnitude that might lead to any adverse effects on WFD ecological status. **Overall rating of cumulative effects:* Negligible risk of cumulative adverse effects on the Southampton Water WFD transitional water body.	Negligible

Water Body Receptor	Option	Assessment of Potential for Cumulative Effects	Risk Rating (RAG)
Western Rother (GB107041012810)	Pulborough Groundwater Licence Variation: In Use 2021 Littlehampton Water Reuse Scheme: In Use 2027	Identifying sources: The Pulborough Groundwater Licence Variation targets the removal of the MRF condition on the groundwater source (and de-coupling from the surface water licence) in order to increase abstraction. The Littlehampton Water Re-use Scheme targets a 20Ml/d effluent transfer to the Western Rother, to be re-abstracted further downstream within the same waterbody. Potential environmental change and predicted response to change: As identified by the WFD assessment, the Pulborough Groundwater Licence Variation has been assessed as provisionally compliant, pending further assessment to confirm that the increased groundwater abstraction will not lead to WFD deterioration for the Western Rother, as a consequence of flow regime alterations. The Littlehampton Water Reuse Scheme has also been assessed as compliant, since the effluent will be highly treated and not expected to have detrimental impacts on the river's water quality or flow regime. Overall rating of cumulative effects: Negligible risk of cumulative adverse effects on the Southampton Water WFD transitional water body.	Negligible

Water Body Receptor	Option	Assessment of Potential for Cumulative Effects	Risk Rating (RAG)
Lower Greensand Arun & Western Streams GB40701G503100	Transfer to Midhurst WSW & Petersfield BH rehabilitation (1.96Ml/d): In Use 2025 Scheme to bring West Chiltington back into service (3.1Ml/d): In Use 2024 Pulborough Groundwater Licence Variation	Identifying sources: The three schemes involve groundwater abstraction within the Lower Greensand Arun & Western Streams groundwater body. Potential environmental change and predicted response to change: Both schemes involve the rehabilitation of boreholes. The Petersfield Borehole abstraction and the Pulborough Groundwater abstraction are unlikely to impact the groundwater body or any groundwater dependent ecosystems. There is some uncertainty regarding the impact of the West Chiltington borehole abstraction on a groundwater-dependent surface water body (River Chilt (GB107041012140) and a GWDTE. Further assessment is necessary to confirm the compliance outcome for two of the abstraction and therefore, there is a low risk of in-combination impacts on the groundwater body. Overall rating of cumulative effects: Low risk of cumulative adverse effects on the Lower Greensand Arun & Western Streams WFD groundwater body.	Low

5. In-combination effects with other water company WRMPs

Assessment of the potential cumulative effects with water resources management options proposed in neighbouring water companies' revised draft and final WRMP19s has been undertaken. The assessment utilised outputs from a Water Resources South East Group (WRSE)³ project. The WRSE group includes six south east water companies (Affinity Water, Portsmouth Water, South East Water, Southern Water, SES Water and Thames Water). The purpose of the project was to input to the development of long-term best value plans for securing water supplies in the south east. Since 2016 the WRSE group has been working to improve the approach to undertaking cumulative effects assessment for WRMP options developed by neighbouring water companies in the South East of England. The latest piece of work aimed to identify the potential for cumulative effects between the six WRSE water companies, to support their WRMP19 and related SEAs in a regional context. It provided a unique opportunity for communication between the six water companies and sharing of respective WRMP19 geographical information.

Table 4 provides the results of the assessment of the potential for cumulative effects with other water companies' WRMP19 based on information available in November 2019. As identified in Table 4, the cumulative effect assessment has not identified any cumulative WFD impacts between Southern Water's WRMP19 and that of other neighbouring water companies within the WRSE group. There could however be alterations to the options at the project stage, that were not identified when carrying out this cumulative assessment and therefore the cumulative effects will need to be reviewed as part of future scheme development.

In-combination WFD impact assessment with other water companies outside of the WRSE group but neighbouring Southern Water (Bournemouth Water/South West Water, Cholderton and District Water and Wessex Water) has also been undertaken. As at November 2018, none of these companies had options in their WRMP19s that would interact with Southern Water's preferred programme and give rise to cumulative impacts on WFD waterbodies.

³ Water Resources South East Group (WRSE) project is an alliance of the six south east water companies (Affinity Water, Portsmouth Water, South East Water, Southern Water, SES Water and Thames Water), the Environment Agency, Natural England, Ofwat, Consumer Council for Water and Defra.



Table 4 Cumulative effects assessment of options between the Southern Water WRMP19 options and other water company WRMP19 options

Surface water	Water	Water resources		
catchment	Company	management option		
	Recommission Meopham Greensa groundwater source (BR_Lug)		The overall increase in abstraction from these three groundwater sources could adversely affect the groundwater body's quantitative status (which is poor status in 2016).	
North Kent Medway Chalk groundwater body	Thames Water	Southfleet/Greenhithe disaggregation scheme	Southfleet/Greenhithe disaggregation scheme will provide an average deployable output benefit of 8.0Ml/d, with a peak of 9Ml/d, whilst BR_Lug groundwater recommissioning scheme has an overall low risk of deterioration in WFD status. The cumulative effects of these two options are not expected to lead to a deterioration of WFD status to the chalk groundwater body given the volumes of abstraction involved within existing licence limits.	
	Southern Water	West Sandwich & Sandwich WSW licence variation	The Affinity Water schemes could result in cumulative effects with the Southern Water scheme West Sandwich & Sandwich WSW	
East Kent Chalk - Stour		Lye Oak Licence Variation	licence variation. This could adversely affect the groundwater body's quantitative status (which was assessed as being at Poor status in 2016). Further work undertaken for Affinity Water's	
groundwater body	Affinity Water	Tappington South - Licence Variation	draft final WRMP has concluded that there would be a low risk of cumulative impacts. The Tappington South does not involve an increase in overall abstracted volumes, and impacts from Lye Oak would be localised and temporary. Further consideration will be given to the potential cumulative effects as the schemes progress to detailed design.	
Stour (Kent) Transitional Water Body	Affinity Water	Dover Docks Reservoir - Broomfield Banks Effluent Reuse	Southern Water's SWA_Plu Stourmouth abstraction scheme involves recommissioning an existing abstraction from the Stour transitional water body but abstraction is constrained by an MRF to protect flow to the Stour estuary. The proposed South East Water Broad Oak Reservoir option will abstract water from the	
	South East	Broad Oak - larger reservoir size - 5,126 MI (36m AOD)	Great Stour upstream but the abstraction licence will contain MRF or hands-off flow provisions to protect Southern Water's	



Surface water catchment	Water Company	Water resources management option	
	Southern	Stourmouth WSW (10MI/d)	existing Stourmouth abstraction. The Affinity Water scheme involves indirect effluent reuse which will reduce freshwater input to the estuary. With the MRF conditions in place for the South East Water and Southern Water schemes to protect flows to the Stour estuary, no adverse effects on the WFD status of the transitional water body are anticipated and there is therefore no risk of WFD status deterioration.



6. Summary of WRMP19 WFD compliance

For the vast majority of the options included in our WRMP19, the WFD assessment has demonstrated overall compliance with WFD objectives and statutory requirements. There are two options in the preferred programme where further investigations are required to confirm WFD compliance: Sandown WTW indirect potable reuse scheme and the West Chiltington groundwater abstraction scheme. We will work closely with the Environment Agency and Natural England over the coming months to agree the scope of the further investigations (and how these dovetail with the WINEP3 investigations required for the West Chiltington abstraction). These investigations will determine if there is a need for any mitigation measures to be developed to avoid WFD status deterioration.

For the Bournemouth Water bulk supply transfer option, South West Water has advised Southern Water that it will be carrying out a WFD risk of status deterioration study as already discussed as part of the West Country Water Resources Group with the Environment Agency. We will liaise with South West Water on their investigations which will need to be completed by 2020 at latest. These investigations will inform the development of any mitigation measures associated with the increased abstraction (within existing licence limits).

Uncertainties were identified for four of the strategic alternatives; Tidal River Arun desalination (10Ml/d), Brighton WTW Indirect Potable Reuse (10Ml/d), and the two Itchen Indirect Water Reuse options; Portsmouth Harbour and Fareham WwTW Indirect Potable Reuse 90Ml/d, and Woolston and Portswood WwTW Indirect Potable Reuse 20.5Ml/d. If any of these schemes are required further investigations will be needed and mitigation measures developed to avoid WF status deterioration.

The potential for in-combination effects on WFD waterbodies arising from options in the preferred programme has been identified with respect to three water bodies, and the risk of impact has been assessed as negligible for two water bodies and low for the other water body. The cumulative effect assessment has also not identified any cumulative impacts between Southern Water's WRMP19 and that of other neighbouring water companies.



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Appendix A: Option WFD Compliance Assessment Screening Outcomes

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This Appendix presents the results of the WFD compliance assessment screening outcomes for those options within the feasible list that were screened out of further assessment based on the potential risk of deterioration of WFD status. The WFD compliance assessment for those options that were screened in for assessment are presented in Appendices B and C.



Option_ID	Unique Option ID	Option Name	Water Body Name	Water Body Code	Water Body Type	Reason for screening out
AE_EWo	AE_EWo	Newbury WSW asset enhancement	N/A	N/A	Groundwater (confined - non WFD)	The scheme will increase the yield of the Newbury source within the existing licence by removing the present constraint imposed by mains leaving the site. The abstraction is from the confined chalk aquifer and therefore there is low risk of impacting surface water features and GWDTEs. Therefore, there is negligible risk of WFD deterioration.
ASR_SCL	ASR_SCL1	ASR (Sussex Coast - Lower Greensand)	N/A	N/A	Groundwater (confined - non WFD)	This option is using spare water available from the Pulborough abstraction licence in order to store it within the Upper Greensand formation underlying the Worthing Chalk. The Upper Greensand is confined by Gault Clays and is not a WFD waterbody, therefore there are no WFD deterioration risks associated with this option.
Br_LuG	Br_LuG	Recommission Meopham Greensand groundwater Source	N/A	N/A	Groundwater (confined - non WFD)	The scheme is to recommission a disused groundwater source abstracting from the Upper Greensand formation which is confined by the gault formation and overlain by a chalk aquifer. Since this is not a WFD waterbody, there is no risk of deterioration.
BS_ABO	BS_ABO1 BS_ABO2	South East Strategic Reservoir – Basingstoke–Lower Itchen WSW	Various crossings of water bodies	Various WFD water bodies	River	This option proposes a transfer of potable water from Thames Water to Lower Itchen WSW. Option is dependent on Thames Water's development of the South East Strategic Reservoir. Thames Water has assessed the WFD risk associated with this water source as





Option_ID	Unique Option ID	Option Name	Water Body Name	Water Body Code	Water Body Type	Reason for screening out
						part of its revised draft WRMP19 which demonstrated there are no risks to WFD compliance. This option takes extra raw water by pipeline to South East Water at Basingstoke and then carrying on to the Southern Water Lower Itchen WSW. No likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings.
BS_Hon	BS_Hon1	Honor Oak (London Water Ring Main) to Burham WSW				
BS_Hon	BS_Hon2	Honor Oak (London Water Ring Main) to Burham WSW	Various crossings of water bodies	Various WFD water bodies		This option proposes a transfer from the Thames Water London Ring Main to Burham WSW. Thames Water has
BS_Hon	BS_Hon3	Honor Oak (London Water Ring Main) to Burham WSW	- water bodies			concluded that this option would not have any risks to WFD compliance in its revised draft WRMP19. No likely impact on WFD water bodies during
BS_Hon	BS_Hon4	Honor Oak (London Water Ring Main) to Burham WSW	Various crossings of	Various WFD	Divor	construction subject to good practice construction methods for river crossings.
BS_Hon	BS_Hon5	Honor Oak (London Water Ring Main) to Burham WSW	water bodies	water bodies	River	ū
BS_Ott	BS_Ott1 BS_Ott2	Transfer from South East Strategic Reservoir to Lower Itchen WSW	Various crossings of water bodies	Various WFD water bodies	River	This option proposes a transfer of raw water from Thames Water to the Southern Water Lower Itchen WSW. Option is dependent on Thames Water's development of the South East Strategic Reservoir. Thames Water has assessed the WFD risk associated with this water source as part of its revised draft WRMP19 which demonstrated there are no risks





Option_ID	Unique Option ID	Option Name	Water Body Name	Water Body Code	Water Body Type	Reason for screening out
						to WFD compliance. No likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings.
BS_Kna	BS_Kna	Import from Bournemouth Water	Various crossings of water bodies	Various WFD water bodies	River	This option proposes a transfer to Hampshire South WRZ from existing licensed sources in the River Avon catchment with no increase to abstraction licence limits. South West Water has advised that for the Bournemouth Water bulk supply transfer option it will be carrying out a WFD risk of status deterioration study as has already been discussed as part of the West Country Water Resources Group with the Environment Agency. We will liaise with South West Water on their investigations which will need to be completed by 2020 at latest. These investigations will inform the development of any mitigation measures associated with the increased abstraction (within existing licence limits). Potential construction impacts related to pipeline crossings but no likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings.
BS_PWC	BS_PWC1	Additional import from Portsmouth Water (additional 9MI/d)	Various crossings of water bodies	Various WFD water bodies	River	Bulk import from PWC to the Hampshire Southampton East WRZ distribution network using spare capacity of an existing water main. The option is dependent on resource development (World's End) by PWC.

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Option_ID	Unique Option ID	Option Name	Water Body Name	Water Body Code	Water Body Type	Reason for screening out
						The WFD risks associated with the source development have been assessed by PWC as part of developing its revised draft WRMP. Potential construction impacts related to pipeline crossings but no likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings.
BS_PWC	BS_PWC2	Additional import from Portsmouth Water (Havant Thicket reservoir development)	Various crossings of water bodies	Various WFD water bodies	River	Bulk import from PWC to the Hampshire Southampton East WRZ distribution network. The option is dependent on resource development (Havant Thicket reservoir) by PWC. The reservoir would be filled from surplus water available for a series of groundwater-fed springs. Potential construction impacts related to pipeline crossings but no likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings. Portsmouth Water will confirm this WFD assessment as part of its WRMP19.
BS_Win	BS_Win	SEW bulk supply near Canterbury	Various crossings of water bodies	Various WFD water bodies	River	This option proposes a transfer of water from South East Water to Birchington WSW. South East Water has spare capacity to enable the transfer of 2Ml/d through the construction of a new pipeline and associated pumping stations. South East Water has assessed the WFD risks associated with the resource element as part of its WRMP.



Option_ID	Unique Option ID	Option Name	Water Body Name	Water Body Code	Water Body Type	Reason for screening out
						Potential construction impacts related to pipeline crossings but no likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings.
GWA_Bro	GWA_Bro	WSW near Cowes - reinstate & additional treatment	N/A	N/A	Groundwater (confined - non WFD)	This option is to reinstate a deep well and borehole source. The groundwater would be abstracted from a confined aquifer that is not designated under WFD. Consequently, there would be a negligible risk to any WFD surface water bodies and any GWDTEs.
IZT_Bro IZT_Rom	IZT_Bro IZT_Rom	Romsey Town and Broadlands valve (HSW-HR reversible)	N/A	N/A	N/A	This is an existing transfer that requires a booster pumping station to be added and therefore there are no WFD deterioration risks.
IZT_Har	IZT_Har1	Winter transfer Stage 2: turbidity/sludge handling process improvements at Pulborough	Western Rother	GB107041012810	River	This option considers the potential for excess surface water that is often available within the River Rother during the winter to be used to rest groundwater abstraction at Pulborough. The additional water will be abstracted within the existing licence conditions that applies to the Pulborough surface water intake to supply the Sussex Coast. The river Western Rother water body continues to be protected by the abstraction licence conditions and MRF constraint and therefore the risk of deterioration in WFD status is negligible.
IZT_Har	IZT_Har2	Winter transfer Stage 2: New main Shoreham/North Shoreham and Brighton A	Western Rother	GB107041012810	River	
IZT_OAN	IZT_OAN1	Hampshire grid (reversible link HSE- HW)	Various crossings of water bodies	Various WFD water bodies	River	These options are designed to support network flexibility and resilience improvements as well as to facilitate





Option_ID	Unique Option ID	Option Name	Water Body Name	Water Body Code	Water Body Type	Reason for screening out
IZT_OAN	IZT_OAN2	Hampshire grid (reversible link HW- HA)				water transfers within Hampshire from new strategic supply schemes (assessed separately in this WFD report). Potential construction impacts related to pipeline crossings but no likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings.
IZT_OAN	IZT_OAN3	Hampshire grid (reversible link HSE- HW-HA)				
IZT_Sel	IZT_Sel1	Utilise full existing transfer capacity (from Faversham)	N/A	N/A	N/A	The option proposes to upgrade existing infrastructure only and therefore there are no WFD deterioration risks.
IZT_Sel	IZT_Sel3	Utilise full existing transfer capacity (from Faversham)	N/A	N/A	N/A	
IZT_TCS	IZT_TCS	Triplicate Cross Solent Main	Solent	GB650705150000	Coastal Water	This option proposes the construction of a new pipeline under the Solent sea bed. No additional abstraction or discharge associated with this option is proposed, therefore there are no WFD deterioration risks. No likely impact on WFD water bodies during construction subject to good practice construction methods being employed to protect the coastal water body.
IZT_Woo	IZT_Woo	Woodside transfer valve (HSW to HR)	N/A	N/A	N/A	This is an existing transfer that requires a booster pumping station to be added and therefore there are no WFD deterioration risks.
RES_BrL	RES_BrL1	Convert Test Lake into a surface water storage site	N/A	N/A	N/A	The "lake" is not a WFD water body and therefore, there is no risk of deterioration to WFD status
RES_BrL	RES_BrL2	Convert Test Lake into a surface water storage site	N/A	N/A	N/A	The "lake" is not a WFD water body and therefore, there is no risk of deterioration to WFD status





Option_ID	Unique Option ID	Option Name	Water Body Name	Water Body Code	Water Body Type	Reason for screening out
WTW_Bur	WTW_BuT	Increase turbidity capability at Burham WSW	N/A	N/A	N/A	This option proposes process recovery at an existing WSW and there are no WFD deterioration risks.
WTW_TOt	WTW_TOt1	Southampton link main (reversible link HSW-HSE)	Various crossings of water bodies	Various WFD water bodies	River	This option transfers water provided by new strategic schemes (assessed elsewhere in this WFD report) in either Hampshire Southampton West or Hampshire Southampton East to the other Southampton WRZ. There are no abstractions or discharges associated with this option directly – it is just a reversible water supply pipeline connecting the two WRZs. Consequently, there are no WFD deterioration risks. Potential construction impacts related to pipeline crossings but no likely impact on WFD water bodies during construction subject to good practice construction methods for river crossings.



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Appendix B: WFD
Compliance Assessment for
Options within the WRMP19

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Appendix B presents the outcome of the WFD compliance assessment for those options included in the WRMP19 (and strategic alternative options) that were screened in for further WFD assessment. A WFD compliance assessment table is provided below for each WFD water body that may be affected by these options.



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1. Options within the WRMP19 preferred programme

1.1 Medway WTW Indirect Potable Water Reuse (18MI/d) (PWR_Ecc18)

WED water had a name MEDWAY										
	WFD water body i		MEDWAY Transitional Water							
	WFD water body type			WFD	water					
	WFD managemen		Thames TraC				water ID	GB5	30604002300	
	River Basin District		Thames	Thames						
	WFD Designation	s, Objectives	and Mitigation							
	WFD Status and RBMP2 Ove		rall Status	Objective (202	21)		Objec	tive (2	2027)	
ody	Objectives	Moderate		-			-			
r bc	Hydromorphologi	cal designation	on	Heavily modifie	ed					
Water body	Water Body Mitigation Measure	No published	d mitigation measures							
	WFD Protected A	reas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitra Direc		Shellfi Direct		Urban Waste Water Treatment Directive	
	YES	NO	YES	NO	YES		YES		NO	
				Construction: N/A						
	body	_	Operation: Transfer of highly treated effluent from Medway WTW to Medway offline storage lake [non-WFD water body] - 18 Ml/d assumed loss of effluent discharge to transitional water body							
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)							
	· Fish	Not assessed	Not assessed	Based on flow statistics derived from Teston GS operating rules for the River Medway Scheme, the train of effluent will result in a reduction in Q95 flow that could						
	Invertebrates	High	High							
ing	· Macroalgae	Good	Good	up to 10.2% of the total flow entering the estua						
ıt (scop	· Phytoplankton	High	High	freshwater invertebrate taxa are more responsive to changes in flow than others. Relative abundance of certain groups may change in response to decreased flow and community richness may decrease in response to increase sedimentation and associated changes in hydrodynamics. Phytoplankton and macroalgae are predicted to maintain their current status since there are less sensitive to flow changes. Overall, the scheme should not significantly impact the WFD elements but will be confirmed by detailed WFI assessment to be carried out as part of the detailed design of the option and the application for environmental permits. A change in the chemical status is assessed as unlikely at the buffering capacity of the estuary will remain largely the same and there will be a reduction in nutrient loading from the WWTW to the estuary. Salinity levels in the estuary are very low at the WWTW and the reduction in effluer discharge is unlikely to lead to any material changes to the salinity regime in the upper estuary.					dance of certain reased flow and	
WFD assessment (scoping)	· Angiosperms	Not assessed	Not assessed						hydrodynamics. cted to maintain sensitive to flow gnificantly impact by detailed WFD detailed design	
	Chemical (Overall)	Good	Good						emain largely the tent loading from in the estuary are ction in effluent al changes to the	
	Protected Area De	Water. Howev	er, these bathi	ing wa	aters ar	e situat	ed at	eerness Bathing a considerable operation of the		



	any a Nutrie sensi affect water	me and its associated construction activities are not expected to have diverse impacts. ent Sensitive Areas: The water body is associated with a nutrient tive area under the Nitrates Directive. However, the scheme will not the management of the protected area and no significant changes in quality are expected; there may be a slight improvement to nutrient is with the reduction in discharge from the WTW.		
	Shellfish Waters: The water body is associated with two designated shell waters (Sheppey and Southend Shellfish Waters). However, these shell waters are a significant distance downstream and therefore, the operation the scheme and any associated construction activities are not expected have any adverse impacts. SPA and Ramsar sites: The HRA has identified no potential for Lie			
	_	ficant Effects (LSE) on the Thames Estuary and Marshes SPA/Ramsar he Medway Estuary and Marshes SPA/Ramsar sites.		
Does the component comply w	ith WF	D Objective		
No deterioration between status classes		Yes; no deterioration between status classes.		
2. No impediments to GES/GEP		Yes; no impediments to GEP		
3. No compromises to water body objectives		Yes; no compromises to water body objectives.		
4. No effects on other water bodies		Yes; no effects on other water bodies.		
5. Assists attainment of water body objectives		No; does not assist with the attainment of water body objectives.		
6. Assists attainment of protected objectives	area	No; does not assist with the attainment of protected area objectives.		

1.2 West Sandwich and Sandwich WSW licence variation (GWA_Fle)

	WFD water body name			East	East Kent Chalk - Stour			WFD body ID	water	GB40701G501500		
	WFD water body type			Grou	Groundwater			River	Basin			
	WFD management catchment			Sout	n East GW			District	Buom	South East		
	W	/FD Designation	s, Object	ives a	nd Mitigation							
	W	/FD Status a	nd RBN	/IP2 Ov	erall Status	Objective (2021)		Object	ive (2027)		
ody	0	bjectives	Poo	r		-			-			
Water body	Water Body Mitigation Measure			er Resto	Restoration							
		WFD Protected	Areas	Areas								
		Bathing Water Directive	Drinkin Water Directiv	•	Conservation of Wild Birds Directive	Habitats Directive	Nitra Direc		Shellfish Directive	Urban Waste Water Treatment Directive		
		NO	YES		NO	NO	YES	1	NO	NO		
ent	_				onstruction: N/A							
assessment	affecting water by a			eration: Aggregation of licences at West Sandwich and Sandwich boreholes – 10 Ml/d sumed output providing deployable output increase of 0.95 Ml/d ADO/MDO in drought allowing increased abstraction from the Sandwich borehole in preference to the West andwich borehole but with no change to the existing aggregate licence volumes.								
WFD	WFD Status Test (2015 statu			5)	Assessed status (construction and operation)							



Quantitative (Overall)	Poor				
Dependent Surface Water Body Status	Poor	Poor	There is one dependent surface water body which may be impacted by this abstraction: Birchington and Little Stour (GB107040019570). A separate assessment is provided below.		
GWDTEs test	Good	Good	There are no known SSSI or Natura 2000 GWDTE sites in the proximity of this abstraction.		
Saline Intrusion	Good	Good	There is no risk of saline intrusion.		
Water Balance	Poor	Poor	The abstraction is unlikely to affect the water balance on a groundwater body scale.		
Chemical (Overall)		Poor	Negligible risk of deterioration in chemical status at a groundwater body scale.		
Protected Area Details					
Does the component	comply with	WFD Obje	ective		
 No deterioration be classes 	etween statu	Yes; no	deterioration between status classes.		
2. No impediments to	Good Status	Yes; no	Yes; no impediments to Good Status.		
3. No compromises to water body objectives		Yes; no	Yes; no compromises to water body objectives.		
4. No effects on other water bodies		(GB107	Yes; may impact on Birchington and Little Stour surface water body (GB107040019570) as assessed separately below – but unlikely to have an adverse impact on WFD status of this surface water body.		
5. Assists attainment objectives	of water boo	No; do	es not assist with the attainment of water body objectives.		
6. Assists attainmen area objectives	t of protecte	No; do	es not assist with the attainment of protected area objectives.		

	WFD water body name		Birchington and Little Stour						
	WFD water b	ody type	River						
	WFD manage catchment	ement	Stour	Stour			GB107040019570		
	River Basin I	District	South East						
			WFD Designation	ons, Objectiv	es and Mitiga	ation			
	WFD Status	RBMP	2 Overall Status	Object	ive (2021)	Ob	jective (2027)		
body	and Objective		Poor		-		Moderate		
oq .	Hydromorph	ological desig	nation	Not designa	ted artificial o	r heavily modifie	ed		
Water	Water Body Mitigation Measure	Restoring sus	tainable abstraction	n project					
			WF	D Protected Areas					
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive		
	NO	NO	NO	NO	YES	NO	YES		
			Construction: N/A						
WFD	Scheme com potentially at water body		10 MI/d assumed ADO/MDO in drou in preference to the state of the stat	ion: Aggregation of licences at West Sandwich and Sandwich boreholes – d assumed output providing deployable output increase of 0.95 Ml/d DO in drought by allowing increased abstraction from the Sandwich borehole because to the West Sandwich borehole but with no change to the existing late licence volumes.					



WFD element (2015) status			Assessed status (construction and operation)			
 Fish 	Poor	Poor	There is a potential for adverse impacts on the flows in the			
 Macro- invertebrates 	Moderate I M		Birchington and Little Stour River, due to the small increase in abstraction that would be authorised from the Sandwich borehole. It is considered unlikely that the flow in the surface water body would			
Macrophytes Not assessed a		Not assessed	be affected sufficiently to lead to a deterioration in ecological stat Further detailed assessment of the hydrogeological linkages wo be required to confirm this understanding which will be carried out part of the planned WINEP groundwater investigations for this way body and to support the abstraction licence variation application.			
Chemical (Overall)	Good	Good	There is negligible risk of deterioration between chemical status classes.			
Protected Area D		vulnerable z nutrient sens the scheme v changes in w	sitive Areas: The water body is associated with a surface water nitrate one under the Nitrates Directive. Birchington and Little Stour is a itive area under the Urban Waste Water Treatment Directive. However, will not affect the management of the protected area and no significant vater quality are expected.			
No deterioration status classes No impediments	between	Yes; no	deterioration between status classes, but further detailed assessment red to confirm this conclusion as part of the WINEP3 investigations.			
No compromises to water body objectives			Yes; no compromises to water body objectives.			
			Yes; no impacts on other water bodies.			
Assists attainmed body objectives		No; doe	No; does not assist with the attainment of water body objectives.			
6. Assists attainment protected area obj		No; doe	No; does not assist with the attainment of protected area objectives.			

1.3 Littlehampton WTW Indirect Potable Water Reuse (20MI/d) (PWR_For20)

	WFD water b	ody	Western Rother							
	WFD water b type	ody	River							
	WFD managem catchment	ent	Arun and Western Streams		S WFD wate	WFD water body ID		3107041012810		
	River Basin Distr	ict	South Ea	st						
	WFD Designations, Objectives and Mitigation									
<u>></u>	WFD Status and		RBMP2 C	Overall Status	Objective (20	21)	Objective (Objective (2027)		
200	Objectives		Moderate	•	- Good					
er k	Hydromorpholog	ical c	designatio	esignation Not designated artificial or heavily modified				d		
Water body	Water B Mitigation Measu	ody re	No published mitigation measures							
	WFD Protected Areas									
	Directive Water Wa		nking er ective	Conservation of Wild Birds Directive	Habitats Directive	Nitrates Directiv		Urban Waste Water Treatment Directive		
	NO	YES	3	NO	NO	YES	NO	YES		
-D ssm	Scheme components		Construction: New discharge outfall							
WF	CL Scheme components potentially affecting water body			Operation : Transfer of highly treated effluent from Littlehampton WTW to the Western River Rother (20 Ml/d) for subsequent re-abstraction for treatment to potable standards.						



WFD element	RBMP2 (2015) status	Assessed s	tatus (construction and operation)			
· Fish	Moderate	Moderate	Construction of the new discharge outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body.			
			The discharge will be treated to high tertiary standards for ammonia, phosphate and BOD, potentially generating an improvement for the phosphate status (currently moderate). Therefore, there will be negligible risk of impacting the			
Macro-invertebrates	High	High	physico-chemical quality elements of this water body. The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status.			
			Based on the Q95 exceedance river flow and proposed scheme output, the river would contain up to approximately 18% of highly treated effluent during operation at low flows. Therefore, the potential for localised increase in flows relative to background levels is low; this is considered unlikely to have a negative impact on river ecology (and invertebrates in particular) in a water body of this size.			
Macrophytes & Phytobentos	Moderate	Resident invertebrate communities (and other biolo elements) in wide, deep rivers tend to associate with sle moving marginal areas, where more complex has structure and conditions would be expected to buffer mitigate any increases in flows of this nature. The disch				
Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as negligible.			
Protected water body drinking w		Area but there scale. Further ater supplies a	Area: the water body (Western Rother) is a Drinking Water is no risk of adversely affecting the chemical status at the rmore, Southern Water will want to ensure no risks to its nd therefore the standards of effluent treatment will meet Area requirements and Drinking Water Safety Plan targets.			
Protected Area Details	Nutrient Sensitive Areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. Western Rother is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls which would set standards for the nutrient concentration of the effluent compliant with the Nitrate Sensitive Area requirements.					
Does the component of		WFD Objecti	ve			
 No deterioration be status classes 	Yes	; no deteriorat	ion between status classes.			
2. No impediments to Yes; r		; no impedime	nts to GES.			
3. No compromises to body objectives	water Yes	; no compromi	ises to water body objectives.			
No effects on other bodies	water Yes	; no effects on	other water bodies.			
5. Assists attainment of body objectives	water No;	does not assis	st with the attainment of water body objectives.			



6.	Assists	attainment	0
pro	tected are	a objectives	

No; does not assist with the attainment of protected area objectives.

1.4 Transfer to Midhurst WSW & Petersfield BH rehabilitation (BR_Rog)

otected Areas								
Waste ent e								
Construction: N/A								
1.6 MI/d								
nay be Durford below.								
s in the								
e on a								
er body								
1								



Drinking Water Protected Area: the water body (Lower Greensand Arun & Western Streams) is a Drinking Water Protected Area but there is negligible risk of adversely affecting the chemical status at the groundwater body scale.

Nutrient Sensitive Areas: The water body is associated with a groundwater nitrate vulnerable zone under the Nitrates Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected.

Does the component comply with WFD Objective							
1. No deterioration between status classes	Yes; no deterioration between status classes.						
2. No impediments to Good Status.	Yes; no impediments to Good Status.						
3. No compromises to water body objectives	Yes; no compromises to water body objectives.						
4. No effects on other water bodies	Yes; the abstraction has the potential to impact on Western Rother Durford (GB107041012800), but this is assessed separately below as being unlikely.						
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.						
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.						

	WED water he	dy nama	۱۸/	estern Rother D)rford					1
	WFD water bo			ver	Junora					
	WFD water bo WFD ma catchment	nagement		ver un and Westerr	n Streams	}		WFD body I	- "STOTE GR1070/1012	
	River Basin D	istrict	Sc	South East						
	WFD Designat	tions, Objec	tive	ives and Mitigation						
	WFD Status RBMP2 Ove			II Status	Obj	ective (2	021)		Objective	(2027)
ody	and Objectives	Moderate			-				Good	
r b	Hydromorpho	logical desi	gna	ation	Not	designat	ed artific	cial or he	avily modifi	ed
Water body	Water Body Mitigation Measure	No publishe	ed r	nitigation meas	ures					
	WFD Protected Areas									
	Bathing Water Directive	Drinking Water Directive		Conservation of Wild Bird Directive	· Uahit		Nitrate Direct		Shellfish Directive	Urban Waste Water Treatment Directive
	NO	NO		NO	NO		NO		NO	YES
		mponents	Construction: N/A							
ping)	potentially water body	affecting		Operation: Refurbishment of Petersfield boreholes - 1.96 Ml/d output in critical period (1.6 Ml/d ADO/MDO) within existing abstraction licence limits						
assessment (scoping)	WFD element	RBMP2 (2015) status		Assessed status (construction and operation)						
me	· Fish	Moderate	:							s in the River Rother
assess	· Macro- invertebrates	Good		Good	hydroged	logical d	ondition	s it is u	ınlikely that	river and the local the flow would be ld be a deterioration
WFD a	Macrophytes& Phytobentos	Moderate		Moderate	affected and therefore unlikely that there would be a deterioration in ecological status. This will need to be confirmed as part of the detailed WINEP3 investigations for this borehole source.					
	Chemical (Overall)	Good		Good	There is classes.	negligibl	e risk o	f deterio	ration between	een chemical status



Protected Area Details	Treatr	ern Rother Durford is a Nutrient Sensitive Area under the Urban Waste Water ment Directive. However, the scheme will not affect the management of the cted area and no significant changes in water quality are expected.							
Does the component comply with WFD Objective									
 No deterioration bet status classes 	ween	Yes; no deterioration between status classes. This will need to be confirmed as part of the WINEP3 investigations for this borehole source.							
2. No impediments to GES/	GEP	Yes; no impediments to GES.							
3. No compromises to body objectives	water	Yes; no compromises to water body objectives.							
4. No effects on other bodies	water	Yes; no impacts on other water bodies.							
5. Assists attainment of water body objectives		No; does not assist with the attainment of water body objectives.							
6. Assists attainment of prot area objectives	ected	No; does not assist with the attainment of protected area objectives.							

1.5 Scheme to bring West Chiltington back into service (BR_Smo): Lower Greensand Arun & Western Streams

		<u> </u>									torri otr	
		FD water ody name		ver Gre eams	eensan	d Arun &	. We		/FD water ody ID	GB4	0701G503100	
		FD water ody type	Gro	undwat	er			Ri	River			
	m	FD anagement atchment	Sou	ıth East	: GW				asin istrict	South East		
	W	FD Designation	ons, C	bjectiv	es and	Mitigation	n					
>	W	FD Status	RBI	MP2 Ov	erall St	atus	Obj	ective (202	21)		Objective (202	27)
poq	ar	nd Objectives	Poc	Poor							Good	
Water body	Water Body Mitigation Measure No published mitig				ation meas	sures	;					
		WFD Protect	ted A	reas								
	Bathing Water Directive		Wate			ervation Id Birds ive			Nitrates Directive		Shellfish Directive	Urban Waste Water Treatment Directive
		NO	YES	s NO			NO		YES		NO	NO
		Scheme components		Construction: N/A								
ıg)	af	otentially fecting w ody	ater	Operation: Recommissioning of West Chiltington boreholes - 3.12 Ml/d deployable output benefit								
(scopin		FD Status Tes	st	RBMF (2015 status)	Assesse	d sta	atus (cons	struction ar	nd ope	eration)	
ment		uantitative Overall)		Good								
WFD assessment (scoping)	De	ependent Sur ater Body Stat				Uncertair	There is one dependent surface water body which may be impacted by this abstraction: River Chilt (GB107041012140). A separate assessment is provided below.					
WF	GWDTEs test			Good		Uncertair	า	abstraction dependent is a risk for	reston Warren SSSI is located in proximity to the straction. It contains habitats that are groundwater pendent such as fens and bogs. Given the proximity there a risk that the abstraction may impact this GWDTE and ther assessment is required. WFD No deterioration			



	I						
			investigations are already scheduled for delivery by 2022 as part of WINEP3.				
Saline Intrusion	Good	Good	There is no risk of saline intrusion.				
Water Balance	Good	Good	The abstraction is unlikely to affect the water balance on a groundwater body scale.				
Chemical (Overall)	Poor	Poor	Negligible risk of deterioration in chemical status groundwater body scale.				
Protected Details Drinking Water Protected Area: the water body (Lower Greensand Arun & Streams) is a Drinking Water Protected Area but there is negligible risk of an affecting the chemical status at the groundwater body scale. Furthermore, Souther will want to ensure no risks to its drinking water supplies. Nutrient Sensitive Areas: The water body is associated with a groundwater vulnerable zone under the Nitrates Directive. However, the scheme will not all management of the protected area and no significant changes in water qual expected.							
Does the component	comply with	WFD Objective)				
No deterioral between status classes No impediments Good Status	S Uncerta		there is a potential risk of deterioration between status classes, further needed as part of the WINEP3 investigations for this borehole source.				
No compromises water body objectives	to Yes; no	Yes; no compromises to water body objectives.					
No effects on o water bodies		y impact on Riv TE (Hurston Wa	er Chilt (GB107041012140), assessed separately below, and arren SSSI)				
5. Assists attainment water body objectives	of No; doe	No; does not assist with the attainment of water body objectives.					
Assists attainment protected area objective	No. doe	e; does not assist with the attainment of protected area objectives.					

1.6 Scheme to bring West Chiltington back into service (BR_Smo): Chilt

	_										
	WFD water boo	dy name	Chilt								
	WFD water boo	dy type	River								
	WFD managen catchment	nent	Arun and Westerr	Streams	WFD wate body ID	r _{GB}	GB107041012140				
	River Basin Di	strict	South East								
	WFD Designations, Objectives and Mitigation										
	WFD Status	RBMP2 C	Overall Status	Objecti	ve (2021)		Objec	tive (2027)			
body	and Objectives	S Mo	oderate		-		(Good			
poq	Hydromorphol	ogical design	ation	Not designated	l artificial or l	neavily modi	ied				
Water	Water Body Mitigation Measure	No publish	ed mitigation measu	asures							
	WFD Protected Areas										
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitrates Directive	Shell Direc		Urban Waste Water Treatment Directive			
	NO	NO	NO	NO	YES	NO		NO			
WFD	Scheme components potentially affecting water body		Construction: N/A								
M				Operation: Recommissioning of West Chiltington boreholes - 3.12 Ml/d deployable output benefit							



WFD element	RBMP2 (2015) status	Assessed	status (construction and operation)				
· Fish	Good	Uncertain					
Macro- invertebrates	High	Uncertain	There is a risk of adverse impacts on the flows in the River Chilt, due to its close proximity of the proposed abstraction. Therefore, there is a risk of deterioration in ecological status and further assessment is				
Macrophytes& Phytobentos	Good	Uncertain	required on the hydrogeological linkage to the river.				
Chemical (Overall)	Good	Good	There is negligible risk of deterioration between chemical state classes.				
Protected Area I		Nutrient Sensitive Areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected					
1. No deterioratio			Objective				
status classes	n between		there is a potential risk of deterioration between status classes, further				
2. No impediment GES/GEP	ts to	assessment is required as part of the WINEP3 investigations for this borehole source					
3. No compromise body objectives	es to water	Yes; no compromises to water body objectives.					
4. No effects on o	ther water	Yes; no imp	pacts on other water bodies.				
Assists attainm water body object		No; does not assist with the attainment of water body objectives.					
6. Assists attainm protected area ob		No; does not assist with the attainment of protected area objectives.					

1.7 Coastal Desalination - Shoreham Harbour (10Ml/d) (DES_Sho10)

		•								
	WFD water body		Sussex							
	WFD water body	type	Coastal Water							
	WFD n catchment	nanagement	South East TraC			D water dy ID	GB640704540003			
	River Basin Distr	ict	South East							
	WFD Designations, Objectives and Mitigation									
	WFD Status	RBMP2 Ove	rall Status	Objective (202	21)	Objec	tive (202	7)		
	and Objectives	Moderate		-		Good				
dy	Hydromorpholog	ical designati	ion	on Heavily modified						
Water body	Water Body Mitigation Measure	No published	l mitigation meas	ures						
	WFD Protected A	reas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitrates Directive	Shellf Direct		Urban Waste Water Treatment Directive		
	YES	NO	YES	NO	NO	NO		NO		
₩ c			Construction:	struction: N/A – existing intake and outfall						



Scheme co potentially affecti body	omponents ing water		creased abstraction from Shoreham Harbour and discharge of Sussex coastal waters – 10 Ml/d assumed DO					
WFD element	RBMP2 (2015) status	Assessed s	tatus (construction and operation)					
· Fish	Not assessed	Not assessed	There is anticipated to be no major adverse impact on WFD status as a result of abstracting water from the Sussex coastal					
· Invertebrates	Good	Good	water body. Fish could be entrained in the proposed abstraction					
· Macroalgae	Not assessed	Not assessed	intake but this would be mitigated with appropriate screening the intake structure in accordance with best practice guidant and regulators are suitable and regulators.					
· Phytoplankton	Not assessed	Not assessed	and regulatory requirements. There is potential for the new discharge of briny waters to impact					
· Angiosperms	Not assessed	Not assessed	the aquatic ecology of the Sussex water body. This is most likely to affect invertebrates and to be restricted to an area of less than 0.5ha near to the discharge (see near field modelling below). Currently only invertebrates are assessed within this water body and other ecological receptors will probably respond differently to the new discharge. The impacts are expected to be proportional to the discharge volumes and will ultimately depend on the option variant that will be implemented. Near field modelling indicates that the plume would reach equilibrium with surrounding water (10% above ambient salinity) at 20.5m for the minimum sized plant of 10Ml/d. This was the maximum distance yielded by the model at any discharge volume, corresponding in this case with spring tide at high water slack conditions. 20.5.2m, equates to the radius of a circular area of <0.3ha in surface area. Given discharge velocity and tidal movement etc, the saline plume would not be expected to disperse in a circular pattern. This is less than 0.0015% of the surface area of the WB. A wider area would be subject to raised salinity levels of <10% above ambient and therefore less than the EC threshold for salinity discharges to shellfish waters. Further assessment would be needed to determine the chronic effect of slightly raised salinity levels over time on ecology and WFD status. Given these data, it is thought highly unlikely that a hypersaline plume originating from the discharge would raise salinity levels within the water body to the point where any local impact on ecology caused a WFD deterioration. Any slight risk would generally be expected to reduce according to the volume of brine discharged, with lower discharge rates resulting in lower risk. If the brine is blended with existing power station effluent, then any localised adverse impact would be further mitigated. The power station cooling water is understood to be currently discharged back into the English Channel through the refurbished outfall at Southwick Beach.					
Chemical (Overall)	Good	Good	The risk of deterioration in chemical status is assessed as negligible.					
Protected Area De	tails	Bathing Waters: there are two bathing waters located near Shoreham, including Southwick and Shoreham Beach. The existing Power Station discharge outfall is situated a significant distance from the shore where it will not impact upon bathing water quality. Construction of the intake is also not considered to lead to any adverse effects on bathing water quality assuming best practice construction methods are applied. Nutrient sensitive areas (Nitrate vulnerable zones): The coastal water body is associated with a nutrient sensitive area under the Nitrates Directive; however, the scheme will not affect the management of the protected area and no significant changes in water quality are expected.						
Doos the server	ont comply							
Does the compone	ant comply w	min wrb objec	CHYC					



1. No deterioration between status classes	Yes; no deterioration between status classes.
2. No impediments to GES/GEP	Yes; no impediments to achieving GES.
3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no impact on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives

1.8 Fawley Desalination (modular to 75 Ml/d) (DES_FawM75): Southampton Water

	WFD water body		9	Southampton Water							
	WFD water body	type		Transitional W	ater						
	WFD managemen	nt cat	chment	South East TraC			WFD v		GB520704202800		
	River Basin Distr	ict		South East							
			WF	Designations, Objectives and Mitigation							
	Objectives Mo			verall Status)		Object	tive (2027)			
				o <mark>derate</mark>						-	
ody	Hydromorpholog	ical c	designation		Heavily modific	ed					
Water body	Water Body Mitigation Measure		No publishe	lished mitigation measures							
				WFD P	rotected Areas	3					
	Directive Water Wat		nking ter ective	Conservation of Wild Birds Directive	Habitate	Nitrates Directive		Shellf Direct		Urban Waste Water Treatment Directive	
	NO	NO		YES	YES	YES		YES		YES	
				Construction: New abstraction intake							
	Scheme compon affecting water b		potentially	Operation: New abstraction from the Solent coastal water body at 75 Ml/d capacity with discharge of brine back to the Solent coastal water body – see below). Other chemicals from the desalination waste stream will be treated on site to neutralise them prior to discharge via an existing wastewater treatment works.							
coping)	WFD element		RBMP2 (2015) status	Assessed status (construction and operation)							
FD assessment (scoping)	· Fish		Good	Good	Construction of the abstraction intake will be managed by good practice construction methods and any residual temporary risks to the water body are assessed as low. Temporary effects due to construction will not cause						
WFD ass	· Invertebrates		Good	Good	deterioration of the water body. Fish could be entruthe proposed abstraction intake but this would be must appropriate screening of the intake structure accordance with best practice guidance and re requirements.				uld be mitigated ke structure in		
	· Macroalgae		Good	Good	within Southar abstraction is west of the	npton W situated mouth	isk of adverse impacts on water quality Water due to the new abstraction. The ed in the Solent (Calshot) to the south-n of the estuary and therefore the spected to prompt any deterioration in				



				dissolved inorganic nitrogen (DIN) status in Southampton Water.				
· Phytoplankton	High	Hi	igh	The abstraction in the Solent is unlikely to lead to any changes in flow/level/velocity regimes within Southampton Water and therefore no adverse effects are anticipated in				
· Angiosperms Good		Go	ood	respect of biological elements. The brine discharge back to the Solent at Calshot may lead to a very minor increase in salinity in the lower reaches of Southampton Water: Far Field dispersion modelling shows a very minor increase above ambient salinity levels for a 200 Ml/d capacity desalination plant – i.e. a worst case scenario – in Southampton Water in the area downstream of the Hamble Estuary. This change in salinity is unlikely to lead to any material impacts on biological elements given the hydrographic regime and ambient salinity of this part of Southampton Water. The discharge would not lead to a deterioration of WFD biological status of the Southampton Water transitional water body.				
Chemical (Overall)	emical (Overall) Fail		ail	The risk of deterioration of chemical status is assessed as negligible although the water body already fails to achieve good chemical status. The abstraction will not alter the chemical status of the water body. No noxious chemicals will be included with the brine discharge to the Solent and instead these will be treated on site to neutralise them prior to discharge via an existing wastewater treatment works. The brine discharge will not lead to any deterioration of chemical status of the water body.				
Protected Area Details		nitrate a nutrie Howev and no Shellfis Southa Subjec there w The op advers include treated wastev deterio SPA, F potenti Southa Assess the sci regime have a species Europe not ha	vulnera ent sens er, the change sh Wat ampton et to car vill be no eration e effect d with I on si vater transar al for ampton sment of heme of and hy any adv so or we ean site ve any	tive Areas: The water body is associated with a surface water able zone under the Nitrates Directive. Southampton Water is sitive area under the Urban Waste Water Treatment Directive. scheme will not affect the management of the protected area are in the nutrient balance are expected. ers: The scheme is located near to the Approaches to Water Shellfish Water in the lower part of Southampton Water. reful construction and pollution control mitigation measures, adverse effects on these shellfish waters due to construction. of the intake and the brine discharge is unlikely to lead to any atts on this Shellfish Water. No noxious chemicals will be the brine discharge to the Solent and instead these will be to neutralise them prior to discharge via an existing reatment works. The brine discharge will not lead to any to the shellfish population in this Shellfish Water. and SAC sites: The HRA Stage 1 screening identified the LSEs on the Solent Maritime SAC and the Solent and Water SPA and Ramsar sites. The HRA Appropriate concluded that any minor potential increase in salinity due to operation are of small magnitude given the overall salinity bydrography of Southampton Water and therefore unlikely to derse effect upon designated habitats, flora and invertebrate intering and breeding bird species associated with these s. It is therefore considered that the desalination plant would adverse effect upon the favourable conservation status of an sites. Further details are provided in the HRA Report.				
Does the component of								
1. No deterioration between status classes				o deterioration between status classes.				
2. No impediments to GES/GEP			Yes; n	o impediments to achieving GEP.				
3. No compromises to water body objectives			Yes; no compromises to water body objectives.					
4. No effects on other w				o impact on other water bodies.				
5. Assists attainment of	water body			bes not assist with the attainment of any mitigation water body				
objectives			objecti	objectives.				



1.9 Fawley Desalination (modular to 75MI/d) (DES_FawM75): Solent

	WFD water body	/ name	Solent								
	WFD water body		Coastal Water								
		nanagement	South East Tra	•	WFD wa	ater CR650	705150000				
	catchment				body ID	GB030	705150000				
	River Basin Dist	trict	South East								
	WFD Designation	ns, Objective	and Mitigation								
	WFD Status a		Overall Status	Objective (2021)	Objective	(2027)				
<u>></u>	Objectives	Moderate		-		-					
Water body	Hydromorpholo Water Body Mitigation Measure	No published	ion Heavily modified mitigation measures								
	WFD Protected	Areas					Ī				
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	s Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive				
	YES	NO	YES	YES	YES	YES	YES				
			Construction: New discharge outfall								
	Scheme components potentially affecting water body WFD element RBMP2 (2015) status		Operation: New abstraction from the Solent coastal water body at 75 Ml/d capacity with discharge of brine back to the Solent coastal water body. Other chemicals from the desalination waste stream will be treated on site to neutralise them prior to discharge via an existing wastewater treatment works. Assessed status (construction and operation)								
WFD assessment (scoping)	· Fish	Not assessed	Not assessed	Construction of the abstraction intake and discharge outfall will be managed by good practice construction methods and any temporary construction risks to the water body are assessed as low. With the application of best practice construction mitigation measures, temporary construction effects will not cause deterioration of the water body. Brine will be discharged via a pipeline slip-lined through the existing but disused Fawley Power Station long-sea outfall with the pipeline extending a further 500m into the Solent from the							
Д	 Invertebrates 	Good	Good	chemicals from the							
W	 Macroalgae 	Not assessed	Not assessed	site to neutralise wastewater treatm		o discharge	via an existing				
	· Phytoplankton	Not	Not assessed	There is potential							
	· Angiosperms	Not assessed	Not assessed	the Solent coasta modelling indicate 150 Ml/d plant (equilibrium with the salinity) at 55.38m distance yielded corresponding with	mpact on the aquatic ecology near to the discharge point within the Solent coastal water body. Near field brine dispersion modelling indicates that the maximum brine discharge rate for a 50 Ml/d plant (as a worst case scenario) would reach quilibrium with the surrounding water (10% above ambient alinity) at 55.38m from the outfall pipe. This was the maximum istance yielded by the model at this discharge volume, orresponding with spring tide at low water slack conditions. 5.38m equates to the radius of a circular area of <1ha in						



			surface area. Given discharge velocity and tidal movement etc, the saline plume would not be expected to disperse in a circular pattern. Therefore, the figure of 1ha provides an over-estimate of the worst-case scenario for the area that could be subject to salinity levels of 10% above ambient. This is less than 0.004% of the surface area of the WB (25,598ha). The results of far field salinity modelling for a 200 Ml/d capacity desalination plant – i.e. a worst case scenario - indicate that the maximum salinity uplift above ambient levels within the proximity of the discharge (at proposed maximum discharge rate) is 1.15 PSU (Practical Salinity Units). This would equate to a salinity uplift above ambient of 3.4%. This value drops by more than half within 500m. The EC Directive threshold for discharges affecting shellfish waters is 10%. The new discharge might affect the localised distribution of invertebrate communities but this is unlikely to have a major effect on fauna across the vast majority of this large coastal water body sufficient to lead to WFD status deterioration. The WFD habitat intertidal seagrass beds would be located approximately 140m from discharge. The saline discharge is likely to be at less than 10% above ambient salinity at this location. Given these brine dispersion modelling data, it is highly unlikely that a hypersaline plume would raise salinity levels to the point
Chemical (Overall)	Fail	Fail	where WFD status deterioration for the Solent water body would arise due to impacted ecology elements. The risk of deterioration of chemical status is assessed as negligible and although the water body already fails to achieve good chemical status the desalination plant abstraction and discharge will not affect the overall chemical status of this large coastal water body. No noxious chemicals will be included with the brine discharge to the Solent and instead these will be treated on site to neutralise them prior to discharge via an existing wastewater treatment works. The brine discharge will not lead to any deterioration of chemical status of the water body.
Protected Area De	etails	nitrate vulnera Sensitive Area scheme will no the nutrient bath Shellfish Wate within the State WFD coastal water (and therefore an area <0.2% results of far a presenting a wambient levels discharge rate salinity uplift al 500m. The EC 10%. Discharge and therefore a Bathing Water Calshot. The athe shore and practice constants will	ive areas: The water body is associated with a surface water ble zone under the Nitrates Directive. The Solent is a Nutrient under the Urban Waste Water Treatment Directive. However, the t affect the management of the protected area and no changes in lance are expected. It is abstraction intake and brine discharge point are located newood Bay designated Shellfish Water, located in the Solent rater body. It is estimated from the near field modelling at 150 Ml/d a worst case scenario) that the discharge plume would equate to of the surface area of the Stanswood Bay Shellfish Water. The field salinity modelling (carried out for a 200 Ml/d scheme, so orst case scenario) indicate that the maximum salinity uplift above within the proximity of the discharge (at proposed maximum is 1.15 PSU (Practical Salinity Units). This would equate to a cove ambient of 3.4%. This value drops by more than half within a Directive threshold for discharges affecting shellfish waters is the permit standards will be set to protect these Shellfish Waters adverse effects on shellfish will not arise. So there is one designated Bathing Water located near Fawley at botraction and discharge outfall will be a significant distance from will not impact upon bathing water quality. Application of best truction methods and appropriate pollution control mitigation ensure no adverse effects on bathing water quality during the intake and outfall infrastructure.



for SF mi ma the inv	PA, Ramsar and SAC sites: The HRA Stage 1 screening identified the potential LSEs on the Solent Maritime SAC and the Solent and Southampton Water PA and Ramsar sites. The HRA Appropriate Assessment concluded that any nor potential increases in salinity due to the scheme operation are of small agnitude given the overall salinity regime and hydrography of the Solent and perefore unlikely to have any adverse effect upon designated habitats, flora and pertebrate species or wintering and breeding bird species associated with the ese European sites. It is therefore considered that the desalination plant would be that any adverse effect upon the favourable conservation status of these propersists. Further details are provided in the HRA Report.				
No deterioration between status					
classes	Yes; no deterioration between status classes				
2. No impediments to GES/GEP	Yes; no impediments to achieving GEP.				
3. No compromises to water body objectives	Yes; no compromises to water body objectives.				
4. No effects on other water bodies	Yes; no impact on other water bodies.				
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.				
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.				

1.10 Sandown WwTW Indirect Potable Reuse (8.5Ml/d) (PWR_SEY9)

	WFD water body	name	Eastern Yar (Lower)							
	WFD water body	type	River	,						
	WFD n	nanagement	Isle of Wight			WFD water body ID		GB107101005971		
	River Basin Distr	ict	South East							
	WFD Designation	s, Objectives	and Mitigation							
	WFD Status	RBMP2 Ove	rall Status	Objective	(2021))	Ol	jective ((2027)	
þ	and Objectives	Poor		•			Go	ood		
poq	Hydromorpholog	ical designati	on	Heavily mo	dified					
Water body	Water Body Mitigation Measure	No published mitigation measures								
	WFD Protected A	reas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitra Dire		Shellfis Directi		Urban Waste Water Treatment Directive	
	NO	YES	YES	YES	YES		NO		NO	
nent	Scheme	components	Construction: New discharge outfall							
WFD assessment (scoping)	potentially affect body	cting water	Yar River to aug	gment river f	lows f	or subseq			e Lower Eastern m re-abstraction	
WFD a	WFD element	RBMP2 (2015) status	from existing Sandown abstraction intake Assessed status (construction and operation)							



· Fish	High	High	Construction of the outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body with the application of mitigation measures. The discharge will be treated to high tertiary standards for			
			ammonia, phosphate and BOD, and therefore, there will be a low risk of impacting the physico-chemical quality elements of			
Macro-invertebrates	High	High	this water body (currently at high status). The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status.			
			Based on measured Q95 statistics (which include the effect of the existing Sandown Augmentation Scheme), the discharge will prompt a pear doubling in low flow under worst case.			
Macrophytes & Phytobentos	Poor	Poor	will prompt a near doubling in low flow under worst case conditions (assuming the existing augmentation scheme is operating at the MDO output of 8 Ml/d), which may disrupt normal patterns of velocity and depth and impact upon resident biological elements such as macroinvertebrates, fish and macrophytes. There may also be local increases in water temperature at low flows but this requires further investigations as to the baseline temperature conditions at low flows and the temperature of the treated effluent. Although the hydrological processes are already substantially altered in this water body by the existing augmentation scheme and the river is a designated HMWB, it is possible that the augmentation by the highly treated effluent may be detrimental to the ecology. Further assessment is required to ascertain the magnitude of impact on ecological receptors.			
Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as negligible.			
		Drinking Wat the chemical will want to e	rer Protected Area: the water body (Lower Eastern Yar) is a ser Protected Area but there is a low risk of adversely affecting status at the water body scale. Furthermore, Southern Water ensure no risks to its drinking water supplies and will ensure the ent meets Drinking Water Safety Plan requirements.			
Protected Area D	Details	Nutrient Sensitive Areas: The water body is associated with a surface we nitrate vulnerable zone under the Nitrates Directive. However, the schemwill not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls with the permit conditions set to meet the Nutrient Sensitive Area standards.				
		SPA and SA of Wight Lag	C: The HRA has identified no potential LSEs on the Solent & Isle oons SAC or Solent & Southampton Water SPA.			
Does the compo		vith WFD Obje	ective			
status classes invest			potential risk of deterioration between status classes. Further in is required to assess these risks and if necessary to develop			
 No impediment No compromi 			neasures to avoid WFD deterioration in dialogue with the EA.			
body objectives 4. No effects or		res, no con	npromises to water body objectives.			
5. Assists attainment	ment of water	,	ot assist with the attainment of water body objectives.			
body objectives 6. Assists at protected area objectives	ttainment of jectives		ot assist with the attainment of protected area objectives.			



1.11 Stourmouth WSW (10MI/d with 20MI covered storage (SWA_Plu10)

	_										
		pe Tr	ansitional Water	r			WED	1	1		
	nent	Sc	outh East TraC					iter	GB520	704004700	
	strict	s Sc	outh East				Dody ID				
				one	Objectives	and Mid	tiantian				
				ons,						(0.0.00)	
					Objectiv	e (202	1)				
	ogica	al designati			Heavily modi	fied			IVIOGE	erate	
Water Body			ed mitigation me	asure	es						
			WF	D Pr	otected Area	as					
Bathing Water Directive	Wat Dire	ective	of Wild Bird Directive	ds	Directive	Direc		Direc		Urban Waste Water Treatment Directive	
NO	YES	3						_		YES	
Scheme comp	onen	ts			w abstraction	intake	, pipewo	rk, WS\	W and co	overed treated	
	ecting	g water	Operation: New 10 MI/d abstraction from the tidal River Stour								
body											
WFD element		RBMP2 (2015) status	Assessed status (construction and operation)								
· Fish		assessed	assessed	assessed by good practice construction methods such that any risk to the							
 Invertebrates 	,	Not assessed	Not assessed	water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body. Fish could be						y. Fish could be	
· Macroalgae		High	High	entrained in the proposed abstraction intake but this would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and regulatory						ake structure in	
· Phytoplankto	n	Poor	Poor	The eco abs red	ere is a pote clogy of the tion straction near uce the prop	dal Gre Stouri ortion	eat Stoui mouth. T of fresh	as a c he inc vater fl	conseque reased a ow and	ence of the new abstraction may lead to a small	
 Phytoplankton Poor Angiosperms Not assessed 			Not assessed	change to the upstream saline wedge. However, the abstraction at 10 Ml/d is small relative to the total freshwater flow entering the estuary (7% reduction in calculated Q95 flow at Plucks Gutter of 134.3 Ml/d) and therefore there is unlikely to be deterioration in WFD ecological status.							
	Good	Good			igible i	risk of c	eteriora	ation bet	ween chemical		
Protected Area Details			Water Protects chemical statu is no adverse quality standa Nutrient Sensi Nitrate Vulners nutrient sensit However, the	cted Area but there is negligible risk of adversely affecting the atus at the water body scale and Southern Water will ensure there are effect on meeting its Drinking Water Safety Plan raw water dards. Institive Areas: The water body is associated with a surface water erable Zone under the Nitrates Directive. Great Stour River is a sitive area under the Urban Waste Water Treatment Directive. e scheme will not affect the management of the protected area					ffecting the ill ensure there raw water surface water ur River is a at Directive.		
	WFD water bod WFD managen catchment River Basin Did WFD Status and Objectives Hydromorphol Water Body Mitigation Measure Bathing Water Directive NO Scheme comprotentially affective body WFD element Fish Invertebrates Macroalgae Phytoplankto Chemical (Overall)	WFD water body ty WFD management catchment River Basin District WFD Status and Objectives Hydromorphologic Water Body Mitigation Measure Bathing Water Directive NO YES Scheme component potentially affecting body WFD element - Fish - Invertebrates - Macroalgae - Phytoplankton Chemical (Overall)	WFD water body type WFD management catchment River Basin District WFD Status and Objectives Hydromorphological designation Measure Bathing Water Directive NO YES Scheme components potentially affecting water body WFD element Fish Fish Invertebrates Invertebrates Macroalgae Chemical (Overall) Find Agood No published RBMP2 (2015) Status Not assessed Not assessed Not assessed RBMP2 (2015) Status Not assessed ROM RBMP2 (2015) Status Not assessed Rod Rod Rod Rod Rod Rod Rod R	WFD water body type WFD management catchment South East TraC	WFD water body type WFD management catchment River Basin District WFD Designations, WFD Status and Objectives Hydromorphological designation Water Body Mitigation Measure WFD Pr Bathing Water Directive NO YES YES Scheme components potentially affecting water body WFD element Fish Not assessed assessed unlited assessed Macroalgae High High High Protected Area Details Protected Area Details WFD Designations, WFD Designations, WFD Pr Conservation of Wild Birds Directive Conservation of Wild Birds Directive Construction: New water reservoir. Operation: New 10 Not assessed assessed unlited according to the construction of water reservoir. Operation: New 10 Not assessed assessed unlited according to the construction of Wild Birds Directive NO YES YES Construction: New water reservoir. Operation: New 10 Not assessed unlited according to the construction of Wild Birds Directive No YES YES Construction: New water reservoir. Operation: New 10 Not assessed unlited according to the construction of Wild Birds Directive Not assessed assessed in the construction of Wild Birds Directive. Not assessed assessed to the construction of Wild Birds Directive. Not assessed assessed in the construction of Wild Birds Directive. Not assessed assessed in the construction of Wild Birds Directive. Not assessed assessed in the construction of Wild Birds Directive. Poperation: New 10 Not assessed of the construction of Wild Birds Directive. Directive Directive Directive Directive Assessed of Wild Birds Directive. Not assessed assessed of the construction of Wild Birds Directive. Directive Directive Directive Directive Directive Directive Directive Assessed of Wild Birds Directive. Not assessed assessed of Wild Birds Directive. Directive	WFD water body type WFD management catchment River Basin District WFD Designations, Objectives at WFD Designations, Objective and	WFD water body type	WFD water body type Transitional Water WFD wanagement catchment South East TraC WFD water Catchment South East WFD Designations, Objectives and Mitigation WFD Status and Objectives Poor Hydromorphological designation Heavily modified	WFD water body type Transitional Water WFD management catchment South East TraC body ID	WFD water body type	



	SPA, Ramsar and SAC: The HRA has identified no potential LSEs on the Thanet Coast SAC. However, the HRA identified the potential for LSEs on the Sandwich Bay SAC, the Stodmarsh SAC and SPA & Ramsar and the Thanet Coast & Sandwich Bay SPA during construction. The Appropriate Assessment concluded that there would be no adverse effects on site integrity of any of the energy of the same provided in the HRA Report.			
Does the component comply wit	n WFD Objective			
1. No deterioration between status classes	Yes; no deterioration between status classes.			
2. No impediments to GES/GEP	Yes; no impediments to GEP.			
3. No compromises to water body objectives	Yes; no compromises to water body objectives.			
4. No effects on other water bodies	Yes; no effects on other water bodies.			
Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.			
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.			

1.12 Pulborough groundwater licence variation (LV_Har)

		/FD waterbody			Lower Greensand Streams			WFD waterbody ID		GB40701G 503100			
	WFD waterbody type				Groundwater			River					
		/FD manageme atchment	nt		South East GW			Basin Distri	=	Soi	uth East		
					WFD Designation	FD Designations, Objectives and Mitigation							
		/FD Status and		RBM	P2 Overall Status	Obje	ctive (2021)	(Obje	ctive (2027)		
ody	0	bjectives			Poor		-				Good		
Waterbody		/ater Body itigation Measu	ıre	No pub	lished mitigation m	easures							
					WFD	Protected A	reas						
		Bathing Water Directive	1	rinking Water rective	Conservation of Wild Birds Directive	Habitats Directive	Nitrate Directi	_	Shellfish Directive		Urban Waste Water Treatment Directive		
		NO		YES	NO	NO	YES		NO		NO		
					Construction: N	Construction: N/A							
(Bı	po	cheme compor otentially affect aterbody		5	Operation: Decorption the abstraction li output benefit of in extreme droug	cence to allow 27 MI/d (extre	increased	abstrac	ction to	provi	de a deployable		
copin	W	/FD Status Test	t		RBMP2 (2015) status	RBMP2 (2015) Assessed status (con					operation)		
) t	Q	uantitative (Ov	erall)	Good								
WFD assessment (scoping)	Dependent Surface Water Body Status			ater	Good	Good	Good WFD status Western			is negligible risk of impacting the status of the dependent waterbody ern Rother (GB107041012810), used separately below.			
WFD a	GWDTEs test				Good	Good				e no known SSSI or Natura 2000 sites in the proximity of this on.			
	S	aline Intrusion			Good	Good			-		saline intrusion.		
	W	/ater Balance			Good	Good					ely to affect the oundwater body		



Chemical (Overall)	Poor	Poor	Negligible risk of deterioration in chemical status at a groundwater body scale.						
Protected Area Details	Drinking Water Protected Area: the groundwater body (Lower Greensand Arun & Western Streams) is a Drinking Water Protected Area but there is negligible risk of adversely affecting the chemical status at the groundwater body scale. Furthermore, Southern Water will want to ensure no risks to its drinking water supplies. Nutrient Sensitive Areas: The water body is associated with a groundwater nitrate vulnerable zone under the Nitrates Directive. However, the scheme will not affect the management of the protected area								
Does the component comply	with WFD Objecti	ve							
No deterioration between status classes	Yes; no deteriora	ation between sta	itus classes.						
2. No impediments to GES/GEP	Yes; no impedim	ents to Good Sta	atus.						
No compromises to water body objectives	Yes; no compror	nises to water bo	dy objectives.						
No effects on other water bodies	Yes; no effects on other water bodies.								
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.								
Assists attainment of protected area objectives	No; does not ass	sist with the attair	No; does not assist with the attainment of protected area objectives.						

	WFD water body	y name	Western Rother	Western Rother							
	WFD water body	y type	River								
	WFD manageme	ent	Arun and Weste	ern Streams		WFD water ID	body	GB107041012810			
	River Basin Dist	trict	South East								
			WFD Designation	WFD Designations, Objectives and Mitigation							
	WFD Status	RBMP2	Overall Status	Obje	ctive (2	2021)			Objective (2027)		
Waterbody	and Objectives	М	oderate		-				Good		
erb	Hydromorpholo	gical desigr	ation	not designat	ted artif	icial or	heavily	/ modi	fied		
Wat	Water Body Mitigation Measure	No publishe	ed mitigation meas	sures							
			WF	FD Protected Areas							
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitrates Directive		Shellfish Directive		Urban Waste Water Treatment Directive		
	NO	YES	NO	NO	YE	S	NO)	YES		
WFD assessment (scoping)	Scheme comport potentially affect waterbody		Operation: Dec	Construction: N/A Operation: Decoupling of the MRF condition for groundwater abstract the abstraction licence to allow increased abstraction to provide a depl output benefit of 27 Ml/d (extreme drought critical period) and 20 Ml/d							
ssment	WFD element	RBM (201 state	P2 5)	Assessed s	tatus (consti	ruction	and c	pperation)		
sse	· Fish	Mode	rate Moderate								
VFD as	 Macro- invertebrates 	Hig	h High	and ecolo	The scheme is unlikely to have adverse effects on the flows and ecology of the Western Rother given the overall groundwater balance of this water body and previous						
->	Macrophytes & Phytobentos	Mode	rate Moderate		ons as	to the	e linkaç	ge bet	tween the Greensand		



Chemical (Overall)	Good		Good	There is negligible risk of deterioration between chemical status classes.					
			Orinking Water Protected Area: the water body (Western Rother) is a Drinking Vater Protected Area but there is no risk of adversely affecting the chemical tatus at the water body scale. Furthermore, Southern Water will want to ensure to risks to its drinking water supplies.						
Protected Area Deta	ails	nitrate sensiti schem	Iutrient Sensitive Areas: The water body is associated with a surface water itrate vulnerable zone under the Nitrates Directive. Western Rother is a nutrient ensitive area under the Urban Waste Water Treatment Directive. However, the cheme will not affect the management of the protected area and no changes a surface water quality are expected.						
Does the componer	nt comply	with W	/FD Object	FD Objective					
No deterioration be classes	etween sta	itus	Yes; no deterioration between status classes.						
2. No impediments to	GES/GEF	>	Yes; no impediments to GES.						
3. No compromises to objectives	o water bo	dy	Yes; no c	compromises to water body objectives.					
4. No effects on other water bodies5. Assists attainment of water body objectives			Yes; no effects on other water bodies.						
			No; does	No; does not assist with the attainment of water body objectives.					
6. Assists attainment area objectives	3. Assists attainment of protected area objectives			No; does not assist with the attainment of protected area objectives.					



2. Strategic alternatives

2.1 Sittingbourne Industrial Water Reuse (7.5MI/d) (IWR_Sit8)

				<u> </u>	iei iveus	,,		, (1)	(<u> </u>	
	WFD water body		Swale								
	WFD water body		Transitional V	Nate	er						
	WFD managemer catchment		Thames TraC bo					water ID	GB530604011500		
	River Basin Distr	ict	Thames								
	WFD Designations, Objectives										
	WFD Status and	RBMP2 Ove	rall Status	Ol	bjective (2021)		Object	tive (2	027)	
ody	Objectives	Moderate		<u> </u>				-			
r b	Hydromorpholog	ical designati	ion		Heavily modi	fied					
Water body	Water Body Mitigation Measure	No published	d mitigation me	easu	ıres						
	WFD Protected A	reas						1			
	Bathing Water Directive	Drinking Water Directive	Conservatio of Wild Bire Directive		Habitats Directive	Nitrat Direc		Shellfi Direct		Urban Waste Water Treatment Directive	
	NO	NO	YES		NO	NO		YES		NO	
		components	Construction								
	body	ung water	Operation: 7.5Ml/d reduction in treated effluent inputs to the Swale with the water redirected for treatment to meet industrial water supply requirements.								
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)								
	· Fish	Not	Not There is a negligible risk of adverse impacts to flows,								
		assessed	assessed							peing re-directed te taxa are more	
	InvertebratesMacroalgae	High Good	High Good							others. Relative	
	Phytoplankton	High	High	ab	oundance of ce	ertain g	roups n	nay char	nge loo	cally in response	
WFD assessment (scoping)	Angiosperms	Not assessed	Not assessed	inv be inf dis flo de Sv wa tha	vertebrate come strongly linkefluence. It is scharge (worstow change) verterioration in swale water body and tat will remain u	nmunity ed to to case f will be status c dy as a the oth	in this the am ely tha rom 13 signif lass for a whole er fresh ged.	part of bient sat the re .3 Ml/d ticant er the biole given inwater in	the estilinity of the control of the	e nature of the stuary is likely to profile and tidal n in freshwater MI/d dry weather to lead to a elements of The lal nature of the othe water body	
Да	Chemical (Overall)	Good	Good							erioration as a	
W	Protected Area D	consequence of the reduced effluent inputs to the estuary. Shellfish Waters: The water body is associated with two designated shellfish waters (Swale Central and Swale East Shellfish Waters). However, the small reduction in freshwater flows to The Swale is not likely to cause any adverse impacts on these shellfish waters and there may be some benefit arising from reduced effluent discharges from the WTW. SPA and Ramsar: The HRA has identified no potential LSEs on the Medway									
			Estuary and Marshes SPA and Ramsar sites. The Appropriate Assessment of this option concluded that there would be no adverse effects on the Swale SPA & Ramsar sites. Further details are provided in the HRA Report.								
	Does the compor	nent comply v									
	No deteriorati classes		status		deterioration be	etween	status	classes			
	2. No impediments	to GES/GEP	Yes;	no i	mpediments to	achie	ing GE	P.			



3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no impact on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of any mitigation water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of any mitigation measures required for the protected areas.

2.2 Brighton WTW Indirect Potable Reuse (joint scheme with SEW, 10MI/d scheme for SWS) (PWR_WREAIt)

	WFD water bod	y name	Ouse between Isfield and Coast							
	WFD water bod	y type	River							
	WFD management catchment		Adur and Ouse			WFD water body ID		GB107041012560		
	River Basin Dis	trict	South East							
	WFD Designations, Objectives and Mitigation									
	WFD Status	RBMP2 Ov	erall Status	Objective (2	2021)		Objectiv	e (202	27)	
dy	and Objectives	Poor		-			-			
pc	Hydromorpholo	gical designa	tion	Heavily mod	ified					
Water body	Water Body Mitigation Measure		d mitigation me	asures						
	WFD Protected	Areas	IS							
	Bathing Water Directive Drinking Water Directive		Conservation of Wild Birds Directive	Habitate	Nitrate Directi			-	Urban Waste Water Treatment Directive	
	NO	YES	NO	NO	NO	NO			YES	
			Construction: New discharge outfall							
(scoping)	Scheme potentially affe body	components ecting water	Operation: New 10 Ml/d indirect potable water reuse scheme with highly treated effluent from Brighton WTW discharged to the River Ouse upstream of the SWS River Ouse abstraction intake prior to re-abstraction at the intake for treatment to potable standards.							
ssment	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)							
WFD assessment (scoping)	· Fish	Bad	Bad Construction of the discharge outfall will be managed by practice construction methods such that any risk to the body is low. Temporary effects due to construction are to cause deterioration of the water body.					risk to the water		



Macro- invertebrates	High	Uncerta	The discharge will be treated to tertiary standards for ammonia, phosphate and BOD. Therefore, there will be a low risk of impacting the physico-chemical quality elements of this water body (currently at moderate status) and the discharge permit will not be granted by the EA unless it is WFD compliant. The proposed tertiary effluent treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status. Based on the measured Q95 river flow and proposed scheme output, the river could contain approximately 40% of highly treated effluent during operation at Q95 flows between the discharge outfall and the abstraction intake. There is a high			
Macrophytes & Phytobentos	Poor	Uncerta	potential for localised increase to low flow conditions and the possibility of changes to the river temperature regime for a short distance down to the abstraction intake. Further assessment is needed in order to assess the impact upon the hydraulic and temperature regime in detail, although noting that the river is already heavily regulated by releases from Ardingly reservoir and therefore the discharge may counteract any temperature cooling effects arising from the reservoir releases. Increases in flow can disrupt normal patterns of velocity and depth and			
Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be only permitted through the EA discharge permit controls that will ensure WFD compliance. The risk of deterioration in chemical status is therefore assessed as negligible.			
Protected Area Details Nutrie nitrate sensit the so signific permit standa			Water Protected Area: the water body (River Ouse) is a Drinking Protected Area but there is no risk of adversely affecting the chemical at the water body scale. Furthermore, Southern Water will want to no risks to its drinking water supplies and therefore the standards of treatment will meet Drinking Water Protected Area requirements and Water Safety Plan targets. It Sensitive Areas: The water body is associated with a surface water rulnerable zone under the Nitrates Directive. River Ouse is a nutrient the area under the Urban Waste Water Treatment Directive. However, were will not affect the management of the protected area and no ant changes in water quality are expected; the discharge would be ad through the EA discharge permit controls which would set do for the nutrient concentration of the effluent compliant with the Sensitive Area requirements.			
Does the component comply with W			-			
No deterioration between status classes No impediments to GES/GEP			Uncertain; further investigation is required into potential effects on river flow regime and water temperature as part of the detailed design of the scheme.			
No compron objectives	nises to water	body	Yes; no compromises to water body objectives.			
 4. No effects on 5. Assists attair 		, hody	Yes; no effects on other water bodies.			
objectives		-	No; does not assist with the attainment of water body objectives.			
6. Assists atta area objectives	inment of pro	rected	No; does not assist with the attainment of protected area objectives.			



2.3 Coastal Desalination - Shoreham Harbour (DES_ShoM20 and DES_ShoM30)

	WED WILLI		•							
	WFD water body		Sussex Constal Water							
	WFD water body		Coastal Water							
	WFD n catchment	nanagement	South East TraC body ID			GB640704540003		704540003		
	River Basin Distr	ict	South East							
	WFD Designation	s, Objectives	and Mitigation							
	WFD Status	RBMP2 Ove	rall Status	Objective (202	21)		Objec	tive (202	27)	
	and Objectives	Moderate		-			Good			
\frac{1}{2}	Hydromorpholog	ical designat	ion	Heavily modifie	ed					
Water body	Water Body Mitigation Measure	No published	shed mitigation measures							
	WFD Protected A	reas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitra Direc		Shellf Direct		Urban Waste Water Treatment Directive	
	YES	NO	YES	NO	NO		NO		NO	
		amnananta	Construction:	N/A – existing i	ntake a	and outfal	1			
		components cting water	Operation: Increased abstraction from Shoreham Harbour and discharge of briny waters to Sussex coastal waters – 20 - 30Ml/d assumed DO							
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)							
	· Fish	Not assessed	Not assessed						impact on WFD Sussex coastal	
	 Invertebrates 	Good	Good	status as a result of abstracting water from the Sussex coasta water body. Fish could be entrained in the proposed abstraction						
	· Macroalgae	Not assessed	Not assessed	the intake stru	cture i	n accorda			iate screening of ractice guidance	
oping	· Phytoplankton	Not assessed	Not assessed	and regulatory	•					
WFD assessment (scoping)	· Angiosperms	Not assessed	Not assessed	the aquatic ecc to affect inverte 0.5ha near to Currently only i and other ecol- to the new of proportional to on the option v Near field mod would reach e ambient salinit maximum dist volume, corres slack condition of <0.3ha in s movement etc	ology of the distribution	f the Sussiand to be scharge (sbrates are receptors age. The charge vothat will be ndicates to ium with 29.2m from yielded being in this came, equation area. Gisaline plu pattern.	sex water restricts see near assess will proint impact of the see implement as a surround the original that at a surround the original that a surround the original that a surround the original that at a surround that at	er body. The body. The body is a field most between the body restricted in the body is a first body in the property of the property of the property of the body is a first body in the property of the body in the property of the body is a first body in the property of the body in the property of the body in the property of the body in the bod	waters to impact This is most likely area of less than nodelling below). In this water body spond differently expected to be altimately depend of the discharge rate and discharge rate rate.	



			A wider area would be subject to raised salinity levels of <10% above ambient and therefore less than the EC threshold for salinity discharges to shellfish waters. Further assessment would be needed to determine the chronic effect of slightly raised salinity levels over time on ecology and WFD status. Given these data, it is thought highly unlikely that a hypersaline plume originating from the discharge would raise salinity levels within the water body to the point where any local impact on ecology caused a WFD deterioration. Any slight risk would generally be expected to reduce according to the volume of brine discharged, with lower discharge rates resulting in lower risk. If the brine is blended with existing power station effluent, then any localised adverse impact would be further mitigated. The power station cooling water is understood to be currently discharged back into the English Channel through the refurbished outfall at Southwick Beach.				
Chemical (Overall)	Good	Good	The risk of deterioration in chemical status is assessed as negligible.				
Protected Area De	Protected Area Details Bases is bases to co		Bathing Waters: there are two bathing waters located near Shoreham, including Southwick and Shoreham Beach. The existing Power Station discharge outfall is situated a significant distance from the shore where it will not impact upon bathing water quality. Construction of the intake is also not considered to lead to any adverse effects on bathing water quality assuming best practice construction methods are applied. Nutrient sensitive areas (Nitrate vulnerable zones): The coastal water body is associated with a nutrient sensitive area under the Nitrates Directive; however,				
		significant cha	e scheme will not affect the management of the protected area and no gnificant changes in water quality are expected.				
Does the compone			ctive				
classes	1. No deterioration between status classes		Yes; no deterioration between status classes.				
2. No impediments to GES/GEP			Yes; no impediments to achieving GES.				
3. No compromises to water body objectives		Yes; no co	Yes; no compromises to water body objectives.				
4. No effects on other water bodies		,	pact on other water bodies.				
objectives		No; does r	No; does not assist with the attainment of water body objectives.				
6. Assists attainment of protected area objectives		No; does r	not assist with the attainment of protected area objectives				

2.4 Tidal River Arun Desalination (DES_Aru10): Arun

	WFD water body	name	ARUN				
	WFD water body	type	Transitional Water				
	WFD management catchment		South East Tra	aC	WFD water body ID	GB540704105000	
	River Basin Distr	rict	South East				
dy	WFD Designation	ns, Objectives	and Mitigation				
body	WFD Status	RBMP2 Ove	rall Status Objective (2021)		Objective (2027)		
er	and Objectives	Moderate		1		Good	
Water	Hydromorpholog	ical designat	on Heavily modified				
۸	Water Body Mitigation Measure	·	I mitigation meas	sures			
	WFD Protected A	Areas					



	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	s Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive			
	NO	YES	YES	YES	NO	NO	NO			
		components cting water	Construction: Desalination plant and new abstraction intake Operation: New abstraction from tidal River Arun – 10Ml/d assumed output							
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation							
	· Fish	Not assessed	assessed	Construction of the practice construction water body are a construction will n	tion methods assessed as	and any tempo low. Temporar	orary risks to the y effects due to			
	· Invertebrates	Not assessed	Not assessed	construction will not cause deterioration of the water body. Fi could be entrained in the proposed abstraction intake but the would be mitigated with appropriate screening of the intal structure in accordance with best practice guidance at regulatory requirements.						
()	· Macroalgae	High	High	There is a low risk of adverse impacts on water quality we the tidal River Arun due to the new abstraction. The we quality in the tidal Arun is already heavily influenced by effloreturns from various WwTWs. The abstraction may have a limpact on the river's capacity to buffer inorganic input However, this is deemed insufficient to prompt a deterioration dissolved inorganic nitrogen (DIN) status. The reduction in flows is likely to impact most upon fish invertebrates, which are not currently assessed. The pote for between class deterioration in macroalgae is expected to						
assessment (scoping)	· Phytoplankton	Not assessed	Not assessed							
WFD assess	· Angiosperms	Not assessed	Not assessed	minimal. The macroalgal community in this transitional wa body will be adapted to a cycle of exposure and submersion						
M	Chemical (Overall)	Good	Good	The risk of detended negligible.	rioration of ch	nemical status	is assessed as			
	Protected Area Details		Drinking water protected area: the water body (Arun) is a Drinking Water Protected Area but there is no risk of adversely affecting the chemical status at the water body scale. SAC: The HRA has identified no potential for LSEs on the Arun Valley SAC.							
			with WFD Objective							
	 No deteriorati status classes 		Yes; no deterioration between classes, further assessment is needed (eg timing abstraction)							
	2. No imped GES/GEP	liments to	Yes; no impediment to achieving GEP							
	3. No compromis body objectives	es to water	Yes; no compromises to water body objectives.							
	4. No effects on bodies	other water	Yes; no impact on other water bodies.							
	5. Assists attainm body objectives	ent of water	No; does not as	sist with the attain	ment of water	body objective	es.			
		ainment of ectives	No; does not assist with the attainment of water body objectives. No; does not assist with the attainment of protected area objectives.							



2.5 Fawley Desalination (modular 75-100 Ml/d) (DES_FawM100): Southampton Water

					pton wa					1
	WFD water body		9	Southampton						
	WFD water body			Transitional W			WFD	Nator		
	WFD managemer		chment	South East TraC			body		GB5	20704202800
	River Basin District			South East	South East					
			WF	Designations, Objectives and Mitigation						
	THE GLALAGE AND			verall Status	Objectiv	e (2021)		(Objec	tive (2027)
	Objectives			derate						-
Water body	Mater Body Mitigation Measure			Heavily modified ed mitigation measures						
				WFD F	Protected Areas					I
	Bathing Water Directive	Wat	nking ter ective	Conservation of Wild Birds Directive		Nitrate Directi		Shellf Direct		Urban Waste Water Treatment Directive
	NO	NO		YES	YES: New abstraction	YES		YES		YES
	Scheme components potentially affecting water body			Operation: New abstraction from the Solent coastal water body at 100 Ml/d capacity with discharge of brine back to the Solent coastal water body – see below). Other chemicals from the desalination waste stream will be treated on site to neutralise them prior to discharge via an existing wastewater treatment works.						
	WFD element		RBMP2 (2015) status	Assessed status (construction and operation)						ion)
ng)	· Fish		Good	Good	Construction of the abstraction intake will be managed by good practice construction methods and any residual temporary risks to the water body are assessed as low. Temporary effects due to construction will not cause deterioration of the water body. Fish could be entrained in					
sment (scoping)	 Invertebrates 		Good	Good	the proposed a with appropri	abstracti ate scr	on intal eening	ke but to	his wo e inta	buld be mitigated ke structure in and regulatory
WFD assessment	· Macroalgae		Good	Good	There is a very low risk of adverse impacts on water qualit within Southampton Water due to the new abstraction. Th abstraction is situated in the Solent (Calshot) to the south west of the mouth of the estuary and therefore th abstraction is not expected to prompt any deterioration is					abstraction. The ot) to the south-d therefore the deterioration in
	· Phytoplankton		High	High	dissolved inorganic nitrogen (DIN) status in Southamptor Water. The abstraction in the Solent is unlikely to lead to any changes in flow/level/velocity regimes within Southamptor Water and therefore no adverse effects are anticipated in					
 Water and therefore no adverse efferespect of biological elements. Angiosperms Good Good Good Good Water and therefore no adverse efferespect of biological elements. The brine discharge back to the Solen to a very minor increase in salinity in Southampton Water: Far Field dispersivery minor increase above ambient salent 					to the Solent at Calshot may lead n salinity in the lower reaches of ield dispersion modelling shows a					



			– in Southampton Water in the area downstream of the Hamble Estuary. This change in salinity is unlikely to lead to any material impacts on biological elements given the hydrographic regime and ambient salinity of this part of Southampton Water. The discharge would not lead to a deterioration of WFD biological status of the Southampton Water transitional water body.			
Chemical (Overall)	Fail	Fail	The risk of deterioration of chemical status is assessed as negligible although the water body already fails to achieve good chemical status. The abstraction will not alter the chemical status of the water body. No noxious chemicals will be included with the brine discharge to the Solent and instead these will be treated on site to neutralise them prior to discharge via an existing wastewater treatment works. The brine discharge will not lead to any deterioration of chemical status of the water body.			
		nitrate vulner a nutrient ser However, the	sitive Areas: The water body is associated with a surface water able zone under the Nitrates Directive. Southampton Water is sitive area under the Urban Waste Water Treatment Directive. scheme will not affect the management of the protected area ges in the nutrient balance are expected.			
Protected Area Details	Shellfi South Subject there were The op- advers include treated waster		ters: The scheme is located near to the Approaches to Water Shellfish Water in the lower part of Southampton Water. areful construction and pollution control mitigation measures, to adverse effects on these shellfish waters due to construction. In of the intake and the brine discharge is unlikely to lead to any cts on this Shellfish Water. No noxious chemicals will be the brine discharge to the Solent and instead these will be site to neutralise them prior to discharge via an existing treatment works. The brine discharge will not lead to any to the shellfish population in this Shellfish Water.			
SP poi So As the reg har spe Eu		SPA, Ramsar and SAC sites: The HRA Stage 1 screening identified the potential for LSEs on the Solent Maritime SAC and the Solent and Southampton Water SPA and Ramsar sites. The HRA Appropriate Assessment concluded that any minor potential increase in salinity due to the scheme operation are of small magnitude given the overall salinity regime and hydrography of Southampton Water and therefore unlikely to have any adverse effect upon designated habitats, flora and invertebrate species or wintering and breeding bird species associated with these European sites. It is therefore considered that the desalination plant would not have any adverse effect upon the favourable conservation status of these European sites. Further details are provided in the HRA Report.				
Does the component of						
1. No deterioration betw	veen status cla	isses Yes; i	no deterioration between status classes.			
2. No impediments to G		Yes; ı	no impediments to achieving GEP.			
3. No compromises to water body		Yes; ı	no compromises to water body objectives.			
objectives 4. No effects on other water bodies		Yes:	no impact on other water bodies.			
5. Assists attainment of water body			No; does not assist with the attainment of any mitigation water body			
objectives		objec				
6. Assists attainment of protected area			oes not assist with the attainment of any mitigation measures			

2.6 Fawley Desalination (modular 75-100 Ml/d) (DES_FawM100): Solent

dy	WFD water body name	Solent				
200	WFD water body type	Coastal Water				
ater k	WFD management catchment	South East TraC	WFD water body ID	GB650705150000		
>	River Basin District	South East				

required for the protected areas.



objectives



			than half within 500m. The EC Directive threshold for discharges affecting shellfish waters is 10%.			
			The new discharge might affect the localised distribution of invertebrate communities but this is unlikely to have a major effect on fauna across the vast majority of this large coastal water body sufficient to lead to WFD status deterioration.			
			The WFD habitat intertidal seagrass beds would be located approximately 140m from discharge. The saline discharge is likely to be at less than 10% above ambient salinity at this location.			
			Given these brine dispersion modelling data, it is highly unlikely that a hypersaline plume would raise salinity levels to the point where WFD status deterioration for the Solent water body would arise due to impacted ecology elements.			
Chemical (Overall)	Fail	Fail	The risk of deterioration of chemical status is assessed as negligible and although the water body already fails to achieve good chemical status the desalination plant abstraction and discharge will not affect the overall chemical status of this large coastal water body. No noxious chemicals will be included with the brine discharge to the Solent and instead these will be treated on site to neutralise them prior to discharge via an existing wastewater treatment works. The brine discharge will not lead to any deterioration of chemical status of the water body.			
		nitrate vulnera Sensitive Area scheme will no	ive areas: The water body is associated with a surface water ble zone under the Nitrates Directive. The Solent is a Nutrient under the Urban Waste Water Treatment Directive. However, the taffect the management of the protected area and no changes in ance are expected.			
Protected Area De		Shellfish Waters: The abstraction intake and brine discharge point are located within the Stanswood Bay designated Shellfish Water, located in the Solent WFD coastal water body. It is estimated from the near field modelling at 150 Ml/d (and therefore a worst-case scenario) that the discharge plume would equate to an area <0.2% of the surface area of the Stanswood Bay Shellfish Water. The results of far field salinity modelling (carried out for a 200 Ml/d scheme, so presenting a worst-case scenario) indicate that the maximum salinity uplift above ambient levels within the proximity of the discharge (at proposed maximum discharge rate) is 1.15 PSU (Practical Salinity Units). This would equate to a salinity uplift above ambient of 3.4%. This value drops by more than half within 500m. The EC Directive threshold for discharges affecting shellfish waters is 10%. Discharge permit standards will be set to protect these Shellfish Waters and therefore adverse effects on shellfish will not arise.				
Protected Area Details Does the component comply		Bathing Waters: there is one designated Bathing Water located near Fawley at Calshot. The abstraction and discharge outfall will be a significant distance from the shore and will not impact upon bathing water quality. Application of best practice construction methods and appropriate pollution control mitigation measures will ensure no adverse effects on bathing water quality during construction of the intake and outfall infrastructure.				
		SPA, Ramsar and SAC sites: The HRA Stage 1 screening identified the potential for LSEs on the Solent Maritime SAC and the Solent and Southampton Water SPA and Ramsar sites. The HRA Appropriate Assessment concluded that any minor potential increases in salinity due to the scheme operation are of small magnitude given the overall salinity regime and hydrography of the Solent and therefore unlikely to have any adverse effect upon designated habitats, flora and invertebrate species or wintering and breeding bird species associated with these European sites. It is therefore considered that the desalination plant would not have any adverse effect upon the favourable conservation status of these European sites. Further details are provided in the HRA Report.				
			ctive			
No deterioration classes	between statu	Yes; no de	sterioration between status classes			



2. No impediments to GES/GEP	Yes; no impediments to achieving GEP.
3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no impact on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.

2.7 Test Estuary WTW Industrial Reuse (IWR_SCM9)

	WFD water body na	Southampton Water									
	WFD water body type		Transitional Water								
	WFD management catchment		South I	East TraC	;		WFD water body ID		GB520704202800		
	River Basin Distric	South I	South East								
	WFD Designations, Objectives and Mitigation										
Water body	WFD Status and	verall Sta	verall Status Objective (2021)				Objective (2027)				
	Objectives										
	Hydromorphologic	al designa	tion	on Heavily modified							
	Water Body Mitigation Measure	No publish	No published mitigation measures								
	WFD Protected Areas										
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive		Habitats Directive	Nitrate Direct		Shellfish Directive		Urban Waste Water Treatment Directive	
	NO	NO	YES		YES	YES		YES		YES	
	Scheme co potentially affect body	Construction: N/A Operation: 9 Ml/d reduction of treated effluent flow inputs to the Test Estuary (part of the Southampton Water transitional water body) from the Test Estuary WTW with the effluent treated instead for industrial water supply requirements									
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)								
	· Fish	Good	Good	There is a risk of adverse impacts to flows in the Test Estu-							
scoping)	· Invertebrates	Good	Good	Southampton Water transitional water body), as a consequence of 9M/d effluent being re-directed for industrial water supply. Although the reduction in flow is relatively small, the WTW discharge occurs into a narrow stretch part of the Test Estuary and therefore, could have a local impact on invertebrates and fish. Some freshwater invertebrate taxa are more responsive to changes in flow than others. Relative abundance of certain groups may change locally in response to decreased freshwater flow inputs. However, the nature of the invertebrate community in this part of the tidal water body is likely to be strongly linked to the ambient salinity profile and double high tide influence of Southampton Water. It is unlikely that the absence of the freshwater discharge will be significant enough to lead to a change in status class for the aquatic ecology of the much larger Southampton Water transitional water body.						oply. Although the arge occurs into a	
WFD assessment (scoping)	· Macroalgae	Good	Good							sive to changes in	
	· Phytoplankton	High	High							uts. However, the e tidal water body	
	· Angiosperms	Good	Good							unlikely that the nt enough to lead f the much larger	
	Chemical (Overall)	Fail	Fail	There is negligible risk of chemical status deterioration as a consequence of the cessation of effluent inputs to the estuary.							
	Protected Area Det	Nutrient Sensitive Areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. Southampton Water is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and									



	no significant changes in water quality are expected although locally there will be a small reduction in nutrient inputs from this WTW.				
	Approace small red any adve arising for SAC: The	Waters: The water body is associated with the Southampton Water and hes to Southampton Water designated Shellfish Waters. However, the duction in freshwater flows to Southampton Water is not likely to cause erse impacts on these shellfish waters and there may be a small benefit rom reduced discharge of treated sewage effluent to the estuary. He HRA has identified no potential LSEs on the Solent Maritime SAC or not and Southampton Water SPA and Ramsar sites.			
Does the component comply with WFD Objective					
 No deterioration between classes 	n status	Yes; no deterioration between status classes.			
2. No impediments to GES/GE	Р	Yes; no impediment to GEP.			
3. No compromises to water objectives	er body	Yes; no compromises to water body objectives.			
4. No effects on other water bo	dies	Yes; no impact on other water bodies.			
5. Assists attainment of wat objectives	er body	No; does not assist with the attainment of any mitigation water body objectives.			
6. Assists attainment of protectives	ted area	No; does not assist with the attainment of any mitigation measures required for the protected areas.			

2.8 Portsmouth Harbour WTW & Peel Common WTW Indirect Potable Reuse (90MI/d) (PWR_BPC)

	WFD water bod	y name	Itchen							
	WFD water body type		River							
	WFD management catchment		Test and Itchen			WFD water body ID		GB107042022580		
Water body	River Basin Dis	trict	South East							
	WFD Designation	ons, Objective	es and Mitigation							
	WFD Status at	nd RBMP2 (Overall Status	Objective	Objective (2021)			Objective (2027)		
	Objectives	Good		-	-			-		
	Hydromorpholo	gical designa	tion Not designated artificial or heavily modified							
Water	Water Body Mitigation Measure	No published mitigation measures								
	WFD Protected Areas									
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitrate Direct		Shellf Direc		Urban Waste Water Treatment Directive	
	NO	YES	NO	YES	YES	ı	NO		YES	
WFD assessment (scoping)	Scheme components potentially affecting water body		Construction: New discharge outfall immediately downstream of a new abstraction intake close to existing Portsmouth Water Lower Itchen abstraction intake. Operation: New 90Ml/d discharge of highly treated tertiary effluent to River Itchen near to the tidal limit with abstraction of the same volume immediately upstream of this discharge from a new abstraction intake.							
WFD (s	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)							



· Fish	High	High	Construction of the new abstraction intake and discharge outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body. These structures may lead to the risk of fish entrainment and mitigation measures in the form of fish screens will be incorporated into the design in accordance with best practice guidance and regulatory requirements. The discharge will be treated to very high tertiary standards for ammonia, phosphate and BOD, and therefore, there will be a low					
Macro- invertebrates	High	High	ammonia, phosphate and BOD, and therefore, there will be a low risk of impacting the physico-chemical quality elements of this water body (currently at high status). Measures to ensure no adverse effects to water temperature will also be developed as part of the detailed design taking account of ambient temperature data in the river under different flow conditions. The water quality standards will be set to mirror as closely as possible the ambient water quality regime of the final 1.5km of the River Itchen to the tidal limit.					
			The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status.					
· Macrophytes & Phytobentos	High	High	Based on the Q95 exceedance river flow, the proposed scheme output of up to 90 Ml/d would represent 36.6% of the Q95 flow at Riverside Park but this would be offset by a commensurate abstraction immediately upstream of the discharge from the new abstraction intake, thereby ensuring no change to the flow regime in final reaches of the river to the tidal limit (Itchen estuary). However if for water quality reasons the discharge location were to be sited at the tidal limit there would be a flow depletion of up to 90 Ml/d in the last 1.5km of the River Itchen. Given this impact on flow that may adversely fish migration and other aquatic ecology, Southern Water plans to locate the discharge immediately downstream of the new abstraction intake and manage water quality impacts through treatment. This will be examined further through the detailed design stage in close consultation with the EA and Natural England should this Strategic Alternative option be required to be developed.					
Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as negligible with the discharge permit conditions being set to protect the chemical status of the river.					
Protected Area Details		Drinking Water Protected Area: the water body (River Itchen) is a Drinking Water Protected Area but there is no risk of adversely affecting the chemical status at the water body scale. The discharge will be made downstream of all of the drinking water abstraction intakes on the River Itchen to avoid any adverse effects on drinking water quality.						
		Nutrient Sensitive Areas: The water body is associated with a surface water Nitrate Vulnerable Zone under the Nitrates Directive. River Itchen is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected with the highly treated effluent which will need to comply with discharge permit conditions set by the EA to protect against nutrient enrichment.						
		SPA, Ramsar and SAC: The HRA stage 1 screening identified the potential for LSEs on the River Itchen SAC but no LSEs on the SAC, SPA and Ramsar sites associated with Southampton Water downstream of the River Itchen. The Appropriate Assessment concluded that there would be no adverse effects on the River Itchen SAC subject to inclusion of agreed mitigation measures which						



	will need to be developed in further detail in close dialogue with Natural England and the EA should this Strategic Alternative option need to be developed.					
Does the component comply with	WFD Objective					
No deterioration between status classes	Yes; no deterioration between classes, however further assessment is required as to the specific water quality standards and mitigation required to be met in respect of water temperature and other parameters to best mirror the ambient water quality regime of the last 1.5km of the River Itchen.					
2. No impediments to GES/GEP	Yes; no impediments to GES					
3. No compromises to water body objectives	Yes; no compromises to water body objectives.					
4. No effects on other water bodies	Yes; no effects on other water bodies.					
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.					
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.					

	WFD water body	9	Southampton Water									
	WFD water body	type		Tran	Transitional Water							
	catchment				th East TraC			WFD v		GB5	20704202800	
	River Basin District				th East							
			,	WFD	VFD Designations, Objectives and Mitigation							
	WFD Status and		RBMP		erall Status	Objectiv	e (2021)	(Objec	tive (2027)	
	Objectives			Mode	erate	<u>-</u>					-	
ody	Hydromorpholog	ical c	designati	on		Heavily modifie	ed					
Water body	Water Body Mitigation Measure			o published mitigation measures								
					WFD P	rotected Areas						
	Bathing Water Directive			Conservation of Wild Birds Directive		Habitate	Nitrate Direct				Urban Waste Water Treatment Directive	
	NO	NO		YES		YES	YES		YES		YES	
	Scheme components potentially affecting water body			Construction: New discharge outfall immediately downstream of a new abstraction intake close to existing Portsmouth Water Lower Itchen abstraction intake. Operation: New 90Ml/d discharge of highly treated tertiary effluent to River								
oing)				Itchen near to the tidal limit with abstraction of the same volume immediate upstream of this discharge from a new abstraction intake.								
ent (scol	WFD element (201 state			P2						ion)		
WFD assessment (scoping)	· Fish		Goo	d	Good	There is a low risk of adverse impacts on water quality with the Southampton Water transitional water body due to the new discharge which will be situated just downstream of the new abstraction intake near the existing Portsmouth Water tener inteller.					body due to the ownstream of the	
WF	Invertebrates		Goo	d Good		In the discharge will be treated to very high tertiary standards for ammonia, phosphate and BOD, and therefore, there will be a low risk of impacting the physico-chemical quality elements of this water body.						



· Macroalgae	Good	t	Good	The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status.			
· Phytoplankton	· Phytoplankton High		High	Consequently, there will be a low risk of impacting the physico-chemical quality elements of this water body (especially dissolved inorganic nitrogen).			
· Angiosperms	Good		Good	Considering the size of the discharge, there is the potential for some localised impacts on water temperature in the uppermost reaches of the Itchen estuary only. Measures to ensure no adverse effects to water temperature will be developed as part of the detailed design taking account of ambient temperature data in the upstream River Itchen under different flow conditions. Given the size of the Southampton Water transitional waterbody, any changes will not be sufficient to prompt water body deterioration between status classes for fish and macroinvertebrates.			
Chemical (Overall)	Fail		Fail	The risk of deterioration of chemical status is assessed as negligible and although the water body already fails to achieve good chemical status the scheme will be designed to ensure no adverse effects on chemical status, and quality standards will be set as part of the discharge permit.			
Nitrate Vunutrient so However, no signific applied to Protected Area Details Protected Area Details Protected Area Details Shellfish V will be de temperatu Given the estuary, no Water Sheavoided by River Itches SPA, Rambe no LSE			te Vulnerable ent sensitive ever, the scheignificant chaited to the effluits Waters: be developed berature data in the mixing it ary, no adverter Shellfish Water Itchen.	Areas: The water body is associated with a surface water a Zone under the Nitrates Directive. Southampton Water is a area under the Urban Waste Water Treatment Directive. Heme will not affect the management of the protected area and anges in water quality are expected with the tertiary treatment usent prior to discharge. Measures to ensure no adverse effects to water temperature of as part of the detailed design taking account of ambient in the upstream River Itchen under different flow conditions. In the river prior to the estuary and further mixing in the Itchen are temperature effects are anticipated on the Southampton laters. Risks of chemical or nutrient impacts on shellfish will be attack treatment applied to the effluent prior to discharge to the ISAC: The HRA Stage 1 screening concluded that there would be SAC, SPA and Ramsar sites associated with Southampton			
Does the component comply with WFD Objective							
No deterioration between status classes				o deterioration between status classes.			
2. No impediments to G			Yes; n	o impediments to achieving GEP.			
3. No compromises to water body objectives				s; no compromises to water body objectives.			
4. No effects on other w				Yes; no impact on other water bodies.			
5. Assists attainment of objectives	water bo	dy	No; do	pes not assist with the attainment of any mitigation water body ives.			
6. Assists attainment of	protected	d area		pes not assist with the attainment of any mitigation measures			
objectives				ed for the protected areas.			

2.9 Combined Woolston and Portswood WwTW Indirect Potable Reuse (PWR_WPI21)

_	WFD water body name	Itchen		
ate:	WFD water body type	River		
N O	WFD management catchment	Test and Itchen	WFD water body ID	GB107042022580



	Divor Basin Div									
	River Basin Distr		South East							
	WFD Designation					(2224)				
	WFD Status and Objectives	Good	verall Status Objective (2021)					Objective (2027)		
	Hydromorpholog		tion	Not	dified					
	Water Body Mitigation Measure		Not designated artificial or heavily modified I mitigation measures							
	WFD Protected A	1				1		_		
	Bathing Water Directive	Drinking Water Directive	Conserv Wild Directive	В	n of irds	Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive	
	NO	YES	NO			YES	YES	NO	YES	
	Scheme control potentially affect body	omponents ting water	Operation	n: N	ew 20		rge of treated		Woolston WwTW en abstraction	
	WFD element	Assesse			construction	-				
	· Fish	High	High						by good practice	
	Macro- invertebrates	High	High	-	Temp	orary effects	due to const		vater body is low. Inlikely to cause	
WFD assessment (scoping)	· Macrophytes & Phytobentos	High	High		deterioration of the water body. The discharge will be treated to tertiary standards for amr phosphate and BOD. The proposed ammonia levels in the treeffluent would allow ammonia to remain at high status. Their there will be negligible risk of impacting the physico-chequality elements of this water body (currently at good some Measures to ensure no adverse effects to water temperature also be developed as part of the detailed design taking accombient temperature data in the river under different conditions. The water quality standards will be set to mir closely as possible the ambient water quality regime of the 1.5km of the River Itchen to the tidal limit. The proposed treatment will also include a process (eith AOP or reverse osmosis) to remove the majority organic checontaminants. Therefore, there will be a low risk of ochemicals such as endocrine disruptors causing deteriorations that the discharge immediately upstream of the tidal limit and moved the majority impacts through treatment. This will be exampled further through the detailed design stage in close consultation the EA and Natural England should this Strategic Alterest.					
	Chemical (Overall)	Good	Good	- \ !	The d would risk of ow.	be permitted t f deterioration	be tertiary tre through the EA in chemical s	ated with RO A discharge pe status is there	or UV AOP and rmit controls. The fore assessed as	
	Protected Area D	Protecte the wate	d Are r bod	water protected area: the water body (River Itchen) is a Drinking Water d Area but there is no risk of adversely affecting the chemical status at body scale. Furthermore, Southern Water will want to ensure no risks king water supplies.						



	Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. River Itchen is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls.
	SAC: HRA stage 1 screening identified the potential for LSEs on the River Itchen SAC, see the HRA screening report for further information.
Does the component comply	with WFD Objective
No deterioration between status classes	Yes; no deterioration between classes, however further assessment is required as to the specific water quality standards and mitigation required to be met in respect of water temperature and other parameters to best mirror the ambient water quality regime of the last 1.5km of the River Itchen.
2. No impediments to GES/GEP	Yes; no impediments to GES
3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no effects on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.

2.10 Sandown Coastal Desalination IOW (8.9MI/d) (DES_San9)

	U Salidowi	- OGGO	ui D 00	<u>am</u>	atio		11 (51511	, a, (D		
	WFD water body	name	Isle of Wigl	ht East	t					
	WFD water body	type	Coastal Water							
	WFD n catchment					WFD water body ID		GB650705530000		
	River Basin Distr	South East	t							
	WFD Designation	s, Objectives	and Mitigat	tion						
	WFD Status	RBMP2 Ove	rall Status	Obje	ctive (2	021)		Objective (2	2027)	
	and Objectives	Good		-				-		
	Hydromorpholog	ical designati	ion		ily mod					
		Flood protect		26.S	edimen	t manag	gement			
Water body		Flood protect					I site selection			
r b		Flood protect			lanage					
ate	Water Body	Coast protec		edimen						
Š	Mitigation Measure	Coast protec	27. Dredge disposal site selection							
		Coast protection use Flood protection use		28.Manage disturbance 2.Remove obsolete structure						
		Flood protect	7.Bank rehabilitation							
		Coast protec	2.Remove obsolete structure							
		Coast protec	7.Bank rehabilitation							
	WFD Protected Areas									
	Bathing Water Directive	Drinking Water Directive	Conservat of Wild B Directive		Habita Directi	-	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive	
	YES	NO	YES		YES		YES	YES	YES	
			Construction: New desalination plant, intake and modifications to dispersion							
ent	Scheme o	components	facilities of existing long sea outfall							
m;		ting water	Operation: New 8.5 Ml/d abstraction from Isle of Wight East coastal water							
assessment	body	body and discharge of brine to the same water body. Other waste stream chemicals will be treated on site and then discharged via the Sandown WTW and existing long sea outfall with the brine discharge.								
D a		RBMP2	and existing	y long	sea out	iali Willi	the bille disc	naige.		
WFD:	WFD element	(2015) status	Assessed	status	s (const	ruction	and operatio	n)		



· Fish	Not	Not	Construction of the intake and outfall will be managed by good				
· Invertebrates	Good Good	assessed Good	practice construction methods and any temporary risks to the water body are assessed as low. Temporary effects due to				
	Not	Not	construction will not cause deterioration of the water body.				
Macroalgae	assessed	assessed	Fish could be entrained in the proposed abstraction intake but				
· Phytoplankton	Not assessed	Not assessed	this would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and				
· Angiosperms	Not assessed	Not assessed	regulatory requirements. The hyper-saline discharge point will be the existing wastewater treatment works (WTW) long sea outfall discharge. The intake will be constructed to avoid any WFD higher sensitivity habitat (notably chalk reef located some 2km away). There is no risk of hydro-morphological changes at a habitat scale. Near field modelling indicates that at a discharge rate of 20Ml/d (representing a worst case scenario), equilibrium with surrounding water (up to 10% above ambient salinity and therefore less than the EC threshold for salinity discharges to shellfish waters) would be reached at 8.7m from the outfall pipe. This was the maximum distance yielded by the model at this discharge volume, corresponding with spring tide at mid-water conditions (the option for 200Ml/d was not modelled). It is estimated that a surface area of 0.025ha could be subject to salinity levels of 10% above ambient. This is less than 0.0001% of the surface area of the WB (26,369ha). A wider area would be subject to raised salinity levels of <10% above ambient and therefore less than the EC threshold for salinity discharges to shellfish waters. Further investigation would be needed to determine the final salinity concentrations chronic effect of slightly raised salinity levels over time on ecology and WFD status. The hyper-saline discharge is likely to have a localised impact on benthic habitats but these impacts are unlikely to				
			extend to sensitive features of the water body due to the high mixing and dispersion characteristics as evidenced from the long sea outfall design work carried out prior to its construction. The risk of deterioration in ecological status of the coastal water body is assessed as negligible.				
Chemical (Overall)	Good	Good	The risk of deterioration of chemical status is assessed as negligible. Desalination process waste stream chemicals will be treated on site and then discharged via the Sandown WTW and existing long sea outfall with the brine discharge.				
		SAC: The HRA has identified no potential LSEs on the South Wight Maritime SAC.					
Protected Area Details		Bathing Waters: There are two bathing waters located near Sandown Yaverland and Sandown. The discharge outfall will be a significant distance from the shore and will not impact upon bathing water quality. Construction the intake will not lead to any adverse effects on bathing water quality assuming best practice construction methods are applied to control the risk of pollution.					
		Shellfish Waters: The water body is large and therefore associated with the Chichester Harbour Shellfish Waters. However, these Shellfish Waters are a significant distance from Sandown Bay and therefore there will be no impact from construction or operation of this scheme.					
_		Nutrient Sensitive Areas (Nitrate Vulnerable Zones): The coastal water body is associated with a Nutrient Sensitive Area; however, the scheme will not affect nitrate concentrations or the management of this protected area.					
Does the compoint 1. No deteriorate							
status classes		Yes; no dete	rioration between status classes.				
2. No imped GES/GEP	diments to	Yes; no impe	ediments to GEP.				



3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no effects on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.



Water Resources Management Plan 2019

Annex 16: Water Framework Directive Assessment Main Report

Appendix C: WFD
Compliance Assessment for options on the feasible list but not included in the WRMP19

December, 2019

Version 1





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Appendix C presents the outcomes of the WFD compliance assessment for those options in the feasible list screened in for further assessment but which **do not** form part of the preferred programme of the WRMP19 or which are not included in the plan as strategic alternative options. A WFD compliance assessment table is provided in this Appendix for each WFD water body that may be affected by these options.

1. Options on feasible list but not included in the WRMP19

1.1 Medway WTW Indirect Potable Water Reuse – Medway (PWR_Ayl18): Medway at Maidstone

	WFD water boo	ly name	Medway at Maidstone									
	WFD water boo		River	alastoric								
	WFD r	nanagement	Medway			WFD	water	GB106	3106040018440			
	catchment River Basin Dis	strict	Thames			body II	J					
	WFD Designati			ion								
	WFD Status	RBMP2 Ove		Objective (20)21)		Object	ive (2027	7)			
	and	Moderate		-	<i>1</i>		-	(,			
dy	Objectives Hydromorphol		ation	Heavily modif	ied							
Water body	Water Body Mitigation Measure	·	I mitigation mea	asures								
	WFD Protected	Areas										
	Bathing Water Directive	Drinking Water Directive	Conservatio of Wild Bird Directive	Habitate	Nitrate Directi	_	Shellfish Directive		Urban Waste Water Treatment Directive			
	NO	YES	NO	NO	YES		NO		NO			
	Scheme components		Construction: New discharge outfall									
	potentially affe	ecting water	Operation: 7 River Medwa		/d of trea	ated efflu	ent from	Medwa	y WwTW to the			
	WFD element	RBMP2 (2015) status		atus (construct	ion and	operatio	n)					
ing)	· Fish	Poor	Poor	practice constru	uction me ary effect	ethods su s due to	ch that a	ny risk to	naged by good the water body unlikely to cause			
WFD assessment (scoping)	· Macro- invertebrates	Good	Good	The discharge will be treated to tertiary standards for ammonia, phosphate and BOD. The proposed ammonia levels in the treated effluent would allow ammonia to remain at high status. Therefore, there will be negligible risk of impacting the physico-chemical quality elements of this water body (currently at moderate status). The proposed treatment will also include a process (either UV AOP								
WFD		or reverse osmo contaminants. T						everse osmosis) to remove the majority organic chemical aminants. Therefore, there will be a low risk of organic nicals such as endocrine disruptors causing deterioration to fish s.				
	Macrophytes Phytobentos	Not assessed	Not assessed	output, the river flows. There is a is considered u (and invertebra Resident inverte	cased on the Q95 exceedance river flow and proposed scheme utput, the river would contain 12% effluent during operation at low ows. There is potential for localised increase in flows however this is considered unlikely to have a negative impact on river ecology and invertebrates in particular) in a water body of this size. Resident invertebrate communities in wide, deep rivers tend to associate with slower moving marginal areas, where more complex							



2

			habitat structure and ambient conditions would be expected to mitigate any small increases in flows. Overall, the scheme should not significantly impact the WFD elements.					
Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as low.					
		Drinking Wa chemical sta	nking water protected area: the water body (Medway at Maidstone) is a nking Water Protected Area but there is a low risk of adversely affecting the emical status. Furthermore, Southern Water will want to ensure no risks to its nking water supplies.					
Protected Area	Details	area under managemen	utrient sensitive areas: The water body is associated with a nutrient sensitive rea under the Nitrates Directive. However, the scheme will not affect the anagement of the protected area and no significant changes in water quality are spected; the discharge would be permitted through the EA discharge permit portrols.					
Does the comp	onent comply	with WFD O	bjective					
1.No deterior status classes	ation betwe	en Yes; no	Yes; no deterioration between status classes.					
2. No impedime	nts to GES/GE	P Yes; no i	Yes; no impediments to GEP.					
3. No compromi objectives	ses to water bo	dy Yes; no	Yes; no compromises to water body objectives.					
4. No effects bodies	on other wa	ter Yes; no	Yes; no effects on other water bodies.					
Assists atta body objectives		ter No; does	No; does not assist with the attainment of water body objectives.					
6. Assists attain area objectives		ed No; does	No; does not assist with the attainment of protected area objectives.					

1.2 Medway WTW Indirect Potable Water Reuse – Medway (PWR_Ayl18): Medway (transitional water)

	<u> </u>		11 61) (11 611								
	WFD water body i	name	MEDWAY								
	WFD water body t	уре	Transitional Wa	ater							
	WFD managemen	t catchment	Thames TraC			WFD water body ID		GB530604002300			
	River Basin Distri	ct	Thames	-							
	WFD Designation	s, Objectives	and Mitigation	nd Mitigation							
	WFD Status and	RBMP2 Ove	rall Status	Objective (2021)			Object	tive (2	027)		
\$	Objectives	Moderate		-			-				
poq	Hydromorphologi	cal designation	on	n Heavily modified							
Water body	Water Body Mitigation Measure	No published	I mitigation meas	ures							
	WFD Protected Areas										
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive			Shellfi Direct		Urban Waste Water Treatment Directive		
	YES	NO	YES	NO	YES		YES		NO		
Ę		components	Construction: N/A								
WFD assessment	potentially affect body	ting water	Operation: Transfer of effluent from Medway WwTW - 18Ml/d assumed output								
W asse	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)								



Tials	Not	Not		The transfer of effluent to normally discharging into the					
· Fish	assessed	assess	ed	Medway Estuary may result in a reduction in flow that could					
 Invertebrates 	High	High		be up to 14% of the Q95 river flow and 5% at Q50. Some					
 Macroalgae 	Good	Good		freshwater invertebrate taxa are more responsive to					
· Phytoplankton	High	High		changes in flow than others. Relative abundance of certain groups may change in response to decreased flow and community richness may decrease in response to increased					
· Angiosperms	Not assesse	ed	sedimentation and associated changes in hydrodynamics. Phytoplankton and macroalgae are predicted to maintain their current status since there are less sensitive to flow changes. Overall, the scheme should not significantly impact the WFD elements but further assessment is required to understand the impact of reduced flow during times of low flow.						
Chemical (Overall)	Good	Good	It is unlikely to be a change in the chemical status as licence conditions, such that the buffering capacity river will remain largely the same.						
	Wate dista			g Waters: The water body is associated with the Sheerness Bathing. However, these bathing waters are situated at a considerable ce from Medway and therefore, the operation of the scheme and its ated construction activities are not expected to have any adverse ts.					
Protected Area De	etails	sensitiv affect th water q	Nutrient sensitive areas: The water body is associated with a nutrient sensitive area under the Nitrates Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls.						
		waters waters of the s	Shellfish Waters: The water body is associated with two designated shellfish waters (Sheppey and Southend Shellfish Waters). However, these shellfish waters are a significant distance from Medway and therefore, the operation of the scheme and any associated construction activities are not expected to have any adverse impacts.						
		and Ma	arshes S	has identified no potential for LSEs on the Medway Estuary SPA or the Thames Estuary and Marshes SPA.					
Does the compon									
No deterioration classes		į:	s require						
2. No impediments			Yes; no	impediments to GEP					
No compromis objectives	3. No compromises to water body objectives			compromises to water body objectives.					
4. No effects on other	her water bodi	es \	Yes; no	effects on other water bodies.					
5. Assists attainment of water body objectives			No; does	oes not assist with the attainment of water body objectives.					
6. Assists attainme objectives	nt of protected	l area	No; does	es not assist with the attainment of protected area objectives.					

1.3 Hastings WTW scheme (PWR_Dar1, PWR_Dar3)

	WFD water body r	name	Darwell Reserv	voir						
	WFD water body t	уре	Lake							
	WFD management catchment		I Rother I		WFD water body ID		GB30744955			
er body	River Basin District		South East	South East						
	WFD Designations	s, Objectives	and Mitigation							
Water	WFD Status and	RBMP2 Overall Status		Objective (2021)	(ctive (2027)			
_	Objectives	Moderate		-		Good				
	Hydromorphological designation			Heavily modified						
		No published	I mitigation mea	sures						





No; does not assist with the attainment of protected area objectives.

area objectives

1.4 Littlehampton WTW Indirect Potable Water Reuse (PWR_For10 and PWR_For20)

	WFD water boo	dv	n Rother		,							
	WFD water boo	dy River										
	WFD manageme	nt Arun a	nd Western Str	eams	WFD wa	ater body	GB107041012810					
	River Bas District	in South	East									
	WFD Designation	s, Objectiv	es and Mitigat	ion								
ody	WFD Status at		RBMP2 Overall Status			(021)	Objective	(2027)				
r bc	Objectives	Modera					Good					
Water body	Water Boo Mitigation Measu	dy re No pub	Not designated artificial or heavily modified p published mitigation measures									
	WFD Protected A	reas										
	Bathing Water Directive	Drinking Water Directive	Conservat of Wild B Directive	irde	Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive				
	NO	YES	NO		OV	YES	NO	YES				
	Scheme components	Const	Construction: New discharge outfall									
	potentially affecting wat body		Operation: Transfer of treated effluent from Littlehampton WwTW to the Western River Rother – 10 – 20 Ml/d assumed output									
	WFD element	(2015) status		d statu	d status (construction and operation)							
ıt (scoping)	· Fish	Modera	ate Moderate	prace bod to co	Construction of the discharge outfall will be managed by goo practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unliked to cause deterioration of the water body. The discharge will be treated to tertiary standards for ammoniar phosphate and BOD, potentially generating an improvement for the phosphate status (currently moderate). Therefore, there we be negligible risk of impacting the physico-chemical quality							
WFD assessment (scoping)	 Macro- invertebrates 	High	High	elements of this water body. The proposed treatment will also include a process (eith AOP or reverse osmosis) to remove the majority or chemical contaminants. Therefore, there will be a low organic chemicals such as endocrine disruptors can deterioration to fish status.								
				outp ope incr	Based on the Q95 exceedance river flow and proposed scheme output, the river would contain 10 – 20 % effluent during operation at low flows. Therefore, the potential for localised increase in flows relative to background levels is low; this is							
	· Macrophytes Phytobentos	& Modera	ate Moderate	(and Res eler mov and mod	I invertebrat ident inver nents) in wir ring margina conditions v lerate increa	tes in partic tebrate cor de, deep riv Il areas, who would be exp ases in flows	ular) in a water mmunities (and vers tend to assere more comple ected to buffer o . For this reason,	ct on river ecology body of this size. other biological ociate with slower x habitat structure r mitigate any such whilst the scheme gical processes, it				



			should not significantly impact the WFD status of biological elements.					
Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as negligible.					
Protected Area	Protected.	g water protected area: the water body (Western Rother) is a Drinking Water ed Area but there is no risk of adversely affecting the chemical status at the water cale. Furthermore, Southern Water will want to ensure no risks to its drinking water						
Details	Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. Western Rother is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls.							
Does the componen	t comply wi	with WFD Objective						
No deterioration be status classes	etween	es; no deterio	oration between status classes					
2. No impedimer GES/GEP	nts to Y	es; no imped	iments to GES.					
3. No compromises t body objectives	o water Y	es; no compr	omises to water body objectives.					
4. No effects on other bodies	er water Y	es; no effects	s on other water bodies.					
5. Assists attainment of body objectives	of water N	No; does not assist with the attainment of water body objectives.						
6. Assists attainm protected area objecti	3 J. N	o; does not a	assist with the attainment of protected area objectives.					

1.5 Portswood WwTW Indirect Potable Water Reuse (PWR_Por9)

	WFD water body	name	Itchen						
	WFD water body	type	River						
	WFD r catchment	nanagement	Test and Itchen			WFD water body ID		GB107042022580	
	River Basin Dist	rict	South East	South East					
	WFD Designations, Objectives and Mitigation								
	WFD Status and	RBMP2 Ove	erall Status	Ob	jective (2021	021)		Objec	ctive (2027)
	Objectives	Good		-				-	
ρ	Hydromorpholog	ion	Not designated artificial or heavily modified						
Water body	Water Body Mitigation Measure		d mitigation me	easur	es				
	WFD Protected A	Areas							
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bir Directive		Habitats Directive			Shellfi: Directi	
	NO	YES	NO		YES	YES	3	NO	YES
WF	Construction: New discharge outfall								



	omponents ting water	Operation: New 8.5MI/d discharge of treated effluent from Gaters Mill WwTW to the River Itchen, downstream of Lower Itchen to offset abstraction during low flows.					
WFD element	RBMP2 (2015) status	Assessed s	status (construction and operation)				
· Fish	High	High	Construction of the outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body.				
			The discharge will be treated to tertiary standards for ammonia, phosphate and BOD. The proposed ammonia levels in the				
Macro-invertebrates	High	High	treated effluent would allow ammonia to remain at high status. Therefore, there will be negligible risk of impacting the physicochemical quality elements of this water body (currently at good status).				
			The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing				
			deterioration to fish status.				
Macrophytes & Phytobentos	High	High	The effluent input will offset abstraction from Lower Itchen at low flows and therefore, the scheme is considered unlikely to have a negative impact on river ecology (and invertebrates in particular). Overall, the scheme will not pose any risk of				
			deterioration to WFD elements. The discharge will be tertiary treated with RO or UV AOP and				
Chemical (Overall)	Good	Good	would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as low.				
		Water Prote status at the	nking water protected area: the water body (River Itchen) is a Drinking ster Protected Area but there is no risk of adversely affecting the chemical tus at the water body scale. Furthermore, Southern Water will want to sure no risks to its drinking water supplies.				
Protected Area De	etails	nitrate vulne sensitive are the scheme significant of	utrient sensitive areas: The water body is associated with a surface water trate vulnerable zone under the Nitrates Directive. River Itchen is a nutrient ensitive area under the Urban Waste Water Treatment Directive. However, e scheme will not affect the management of the protected area and no gnificant changes in water quality are expected; the discharge would be emitted through the EA discharge permit controls.				
			IRA stage 1 screening identified the potential for LSEs on the SAC, see the HRA screening report for further information				
Does the compon			jective				
No deterioration classes		Yes; no	deterioration between status classes.				
2. No impediments			o impediments to GES				
No compromise objectives		162, 110	Yes; no compromises to water body objectives.				
4. No effects on oth5. Assists attainmeter		ody	o effects on other water bodies.				
objectives		No, do	pes not assist with the attainment of water body objectives.				
6. Assists attainm area objectives	ent of protec	No; do	es not assist with the attainment of protected area objectives.				



1.6 Portswood WwTW Indirect Potable Water Reuse (PWR_Por13)

	1 1111_1 01		T									
	WFD water body		Itchen									
	WFD water body		River									
	WFD n catchment	nanagement	Test and Itc	hen			WFD body I	water	GB	1070420225	80	
	River Basin Distr	ict	South East				body i	D				
	WFD Designation	_		ion								
	WFD Status and	RBMP2 Ove	erall Status Objective (2021)					Object	ive (2	2027)		
	Objectives	Good	- - - - - - - - - -									
ybc	Hydromorpholog	ical designat	ion	Not	designated ar	tificia	l or hea	vily modi	fied			
Water body	Water Body Mitigation Measure	No publishe	d mitigation n	neasu	res							
	WFD Protected A	reas										
	Bathing Water Directive	o i water		on Sirds	Habitats Directive		rates Shellfi ective Directi		-	Urban Water Treatment Directive	Waste	
	NO	NO		YES	YES	3	NO		YES			
	Scheme d				Construction: New discharge outfall							
	potentially affect	ting water			13MI/d discha			effluent	from	Portswood V	//wT\//	
	body				n, upstream of							
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)									
	· Fish	High	High	Construction of the outfall will be managed by good construction methods such that any risk to the water bod Temporary effects due to construction are unlikely to deterioration of the water body. The discharge will be treated to tertiary standards for ar						e water body unlikely to dards for amr	is low. cause monia,	
sessment (scoping)	· Macro- invertebrates	High	High	phosphate and BOD. The proposed ammonia treated effluent would allow ammonia to remain Therefore, there will be negligible risk of impactir chemical quality elements of this water body (cu status). The proposed treatment will also include a proc AOP or reverse osmosis) to remove the manual remains the proposed treatment will also include a process.						nain at high sacting the photocommunity a process (either majority of	status. nysico- t good ner UV organic	
WFD assessment	· Macrophytes & Phytobentos	High	High	chemical contaminants. Therefore, there will be a low ri organic chemicals such as endocrine disruptors can deterioration to fish status. Discharges will be used when abstraction would otherwis limited due to low flow. The scheme will not decrease the in the river and it is considered unlikely to have a neg impact on river ecology (and invertebrates in particular). Over the scheme will not pose any risk of deterioration to elements.						ausing ise be e flows egative overall, WFD		
	Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as low.						ntrols.		
	Protected Area D	etails			otected area: Area but there							



	tatus at the water body scale. Furthermore, Southern Water will want to nsure no risks to its drinking water supplies.
r s tl	lutrient sensitive areas: The water body is associated with a surface water itrate vulnerable zone under the Nitrates Directive. River Itchen is a nutrient ensitive area under the Urban Waste Water Treatment Directive. However, ne scheme will not affect the management of the protected area and no ignificant changes in water quality are expected; the discharge would be ermitted through the EA discharge permit controls.
	AC: The HRA stage 1 screening identified the potential for LSEs on the iver Itchen SAC, see the HRA screening report for further information
Does the component comply wit	n WFD Objective
 No deterioration between statu classes 	Yes; no deterioration between status classes.
2. No impediments to GES/GEP	Yes; no impediments to GES
3. No compromises to water bod objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no effects on other water bodies.
Assists attainment of water bod objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protecte area objectives	No; does not assist with the attainment of protected area objectives.

1.7 Woolston WwTW Indirect Potable Reuse (PWR_Wol8)

	WFD water body	name	Itchen							
	WFD water body	type	River							
	WFD m catchment	anagement	Test and Itchen			VFD wody ID	ater	GB107042022580		
	River Basin Distr	rict	South East							
	WFD Designation	ns, Objective	s and Mitigation	and Mitigation						
	WFD Status	RBMP2 Ove	erall Status	Objective (20)21)		Objec	ctive (2027)		
	and Objectives	Good		-			-			
dy	Hydromorpholog	ical designa	tion	lot designated a	artificial or	heavily	modifi	ed		
Water body	Water Body Mitigation Measure	·	d mitigation mea	sures						
	WFD Protected A	reas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	Habitats Directive	Nitrates Directiv	•	ellfish ective			
	NO	YES	NO	YES	YES	NC)	YES		
int		omponents	Construction:	New discharge	outfall					
WFD assessment	body	potentially affecting water body		Operation: New 7.5Ml/d discharge of treated effluent from Woolston WwTW to R Itchen to support abstraction at Lower Itchen						
N asse:	WFD element	RBMP2 (2015) status	Assessed stat	us (construction	on and op	peration)			



· Fish	High	High	ı	Construction of the discharge outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body. The discharge will be treated to tertiary standards for ammonia,			
Macro- invertebrates	High	High		phosphate and BOD. The proposed ammonia levels in the treated effluent would allow ammonia to remain at high status. Therefore, there will be negligible risk of impacting the physico-chemical quality elements of this water body (currently at good status). The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic			
Macrophytes &				chemicals such as endocrine disruptors causing deterioration to fish status. Discharges will be used to offset abstraction at Lower Itchen			
Phytobentos High High			l	during low flows and therefore, the scheme is considered unlikely to have a negative impact on river ecology (and invertebrates in particular). Overall, the scheme will not pose any risk of deterioration to WFD elements.			
Chemical (Overall)	Good	Good	d	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as low.			
		Prote the w	ected Arvater bo	er protected area: the water body (River Itchen) is a Drinking Water rea but there is no risk of adversely affecting the chemical status at dy scale. Furthermore, Southern Water will want to ensure no risks g water supplies.			
Protected Area D	Details	nitrat sens sche chan	te vulne sitive are eme will nges in	sitive areas: The water body is associated with a surface water rable zone under the Nitrates Directive. River Itchen is a nutrient a under the Urban Waste Water Treatment Directive. However, the not affect the management of the protected area and no significant water quality are expected; the discharge would be permitted EA discharge permit controls.			
		Itche	n SAC,	stage 1 screening identified the potential for LSEs on the River see the HRA screening report for further information.			
Does the compo			NFD Ob	jective			
 No deterioratio classes 	n between st	tatus	Yes; n	o deterioration between status classes.			
			Yes; n	o impediments to GES			
_ into impodiment	0 10 0 - 0, 0 - 1			no compromises to water body objectives.			
3. No compromis objectives		body	Yes; n	o compromises to water body objectives.			
3. No compromis	es to water b			o compromises to water body objectives. o effects on other water bodies.			
3. No compromis objectives	ther water bo	dies	Yes; no				



1.8 Combined Woolston and Portswood WwTW Indirect Potable Reuse (PWR_WPI14)

	WFD water body name Itchen										
	WFD water body		River								
		nagement	Test and Itch	nen		WFD \	vater	GB1070	GB107042022580		
	River Basin Dis	trict	South East								
	WFD Designation	ons, Objective	es and Mitig	and Mitigation							
	WFD Status	RBMP2 Ov	erall Status	Ol	ojective (2021)		Obje	ctive (20	27)		
	and Objectives	Good		-			-				
dy	Hydromorpholo	gical designa	ation	Not des	signated artificia	or heavily m	odified	t			
Water body	Water Body Mitigation Measure		ed mitigation	mitigation measures							
	WFD Protected	Areas									
	Bathing Water Directive	Drinking Water Directive	Conserva of Wild Directive		Habitats Directive	Nitrates Directive	Dir	ellfish ective	Urban Waste Water Treatment Directive		
	NO	YES	NO		YES	YES	NC)	YES		
		components	Construct	Construction: New discharge outfall							
	potentially affe	cting water	Operation	Operation: New 13.5Ml/d discharge of treated effluent from Woolston WwTW							
	body		and Ports	and Portswood WwTW to River Itchen, to support Lower Itchen abstraction							
	WFD element	(2015) status	Assessed	Assessed status (construction and operation)							
scoping)	· Fish	High	High	cons Tem dete The phos	Construction of the outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body. The discharge will be treated to tertiary standards for ammonia, phosphate and BOD. The proposed ammonia levels in the treated effluent would allow ammonia to remain at high status. Therefore, there will be negligible risk of impacting the physico-chemical quality elements of this water body (currently at good status). The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status. Discharges will be used to offset abstraction at Lower Itchen during low flows and therefore, the scheme is considered unlikely to have a negative impact on river ecology (and invertebrates in particular). Overall, the scheme will not pose any risk of deterioration to WFD elements.						
WFD assessment (scoping)	Macro- invertebrates	High	High	ther qual The AOF cont							
	Macrophytes Phytobentos	High	High	fish Disc during to h part dete							
	Chemical (Overall)	Good	Good	The wou	discharge will ld be permitted to of deterioration	be tertiary tr through the E	A disc	harge per	or UV AOP and mit controls. The ore assessed as		



Protected Area Details	Drinking water protected area: the water body (River Itchen) is a Drinking Water Protected Area but there is no risk of adversely affecting the chemical status at the water body scale. Furthermore, Southern Water will want to ensure no risks to its drinking water supplies. Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. River Itchen is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the						
	scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls.						
	SAC: HRA stage 1 screening identified the potential for LSEs on the River Itchen SAC, see the HRA screening report for further information.						
Does the component comply	with WFD Objective						
1. No deterioration between status classes	Yes; no deterioration between status classes.						
2. No impediments to GES/GEP	Yes; no impediments to GES						
3. No compromises to water body objectives	Yes; no compromises to water body objectives.						
4. No effects on other water bodies	Yes; no effects on other water bodies.						
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.						
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.						



1.9 Brighton WTW Indirect Potable Reuse (PWR_WRE50alt)

					iold and Coast				Journ,		
	WFD water body WFD water body		River	en isi	ield and Coast	<u> </u>					
	WFD managemen			10.5		W	FD water	<u> </u>	2407044040500		
	catchment		Adur and Ou	use			ody ID	GE	3107041012560		
	River Basin Distr	ict	South East								
	WFD Designation	ns, Objective	s and Mitigat	tion							
	WFD Status		erall Status	Obj	ective (2021)		Objectiv	e (20	027)		
ody	and Objectives	Poor		-			-				
er b	Hydromorpholog	ical designa	ion Heavily modified								
Water body	Water Body Mitigation Measure	No publishe	d mitigation n	neasu	ires						
	WFD Protected A	reas					T				
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild B Directive		Habitats Directive	Nitrates Directive	Shellfish Directive		Urban Waste Water Treatment Directive		
	NO	YES	NO		NO	NO	NO		YES		
		omponents	Construction	n: Ne	ew discharge o	outfall					
	potentially affect body	Operation: New 78MI/d discharge of treated effluent to River Ouse									
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)								
sment (scoping)	· Fish	Bad	Bad	The photo important body The AOF cherorga	struction methon porary effects erioration of the discharge will sphate and BC acting the phy (currently at proposed treat or reverse mical contamination of the proposed treat or reverse mical contamination of the proposed treat contamination of the proposed treat or reverse mical contamination or reverse	be treated to DD, and then sico-chemica high status). atment will all osmosis) to nants. There is such as	any risk to the struction are tertiary star efore, there all quality elements of the social fore, there were the fore, there we have the social fore, there we have the social fore, there we have the social fore.	ndare will emer	y good practice rater body is low. nlikely to cause ds for ammonia, be a low risk of hts of this water ocess (either UV majority organic be a low risk of ruptors causing		
WFD assessment	· Macro- invertebrates	High	Uncertain	Based on the Q95 exceedance river flow and proposed scheme output, the river would contain 55% effluent during operation at low flows. There is a potential for localised increase in flows and further assessment is needed in order to understand the impact upon the hydraulic regime, which is already heavily regulated by releases from Ardingly reservoir. Major increases in flow can disrupt normal patterns of velocity and depth and impact upon							
	Macrophytes & Phytobentos	Poor	Uncertain	resident biological elements such as macroinvertebrates and macrophytes. In this case, where hydrological processor are already substantially altered and where the river designated HMWB, it is difficult to predict the potential impute major change in flow on the biology elements with a degree of certainty. Further investigation is required to lunderstand the potential magnitude of the impact on receptors, particularly during times of low flow.					gical processes the river is a ptential impact of ents with a high equired to better mpact on these		
	Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP a would be permitted through the EA discharge permit control. The risk of deterioration in chemical status is theref assessed as negligible.							



Protected Area Details Protected Area Details Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. River Ouse is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls. Does the component comply with WFD Objective					
Does the component comply v	with W	FD Objective			
No deterioration between sclasses	status	Uncertain; there is a potential risk of deterioration between status classes, further investigation is required.			
2. No impediments to GES/GEP)	olasses, furtiler investigation is required.			
3. No compromises to water objectives	body	Yes; no compromises to water body objectives.			
4. No effects on other water bod	lies	Yes; no effects on other water bodies.			
5. Assists attainment of water objectives	body	No; does not assist with the attainment of water body objectives.			
6. Assists attainment of prot area objectives	ected	No; does not assist with the attainment of protected area objectives.			

1.10 Sittingbourne Industrial Water Reuse (IWR_Sit1)

	WFD water body	name	SWALE				•				
	WFD water body		Transitional Water								
	WFD managemer catchment	• •	Thames TraC				WFD water body ID		GB5	GB530604011500	
	River Basin Distr	ict	Thames				_				
	WFD Designation	s, Objectives	and Mitigatio	and Mitigation							
	WFD Status and	RBMP2 Ove	rall Status	OI	bjective (2021)		Object	ive (2	027)	
dy	Objectives	Moderate		·				1			
po	Hydromorpholog	ical designati	ion		Heavily modi	fied					
Water body	Water Body Mitigation Measure	No published	d mitigation me								
	WFD Protected Areas										
	Bathing Water Directive	Drinking Water Directive	Conservatio of Wild Bire Directive		Habitats Directive	Nitra Direc				Urban Waste Water Treatment Directive	
	NO	NO	YES		NO	NO		YES		NO	
		components									
ing)	body	ding water	Operation: 7.5Ml/d reduction in treated effluent inputs to the Swale								
WFD assessment (scoping)	WFD element	RBMP2 (2015) status	Assessed st	atu	s (constructio	n and	operat	ion)			
ner	· Fish	Not	Not							ts to flows, as a	
ssr		assessed	assessed							re-directed for e taxa are more	
sse	Invertebrates	High	High							others. Relative	
) as	Macroalgae Dhytaplankton	Good	Good							cally in response	
VFC	Phytoplankton	High	High							ne nature of the	
- >	· Angiosperms	Not assessed	Not assessed	to	be strongly lin	nked to	the an	nbient s	alinity	river is assumed profile and tidal of the freshwater	



			discharge will be significant enough to lead to a deterioration in status class for the biology of The Swale					
Chemical (Overall)	Good	Good	There is no risk of chemical status deterioration as a consequence of the cessation of effluent inputs to the estuary.					
waters reduct		waters (reductio	n Waters: The water body is associated with two designated shellfish Swale Central and Swale East Shellfish Waters). However, the small in in freshwater flows to The Swale is not likely to cause any adverse on these shellfish waters.					
	ne HRA has identified no potential LSEs on the Medway Estuary and s SPA & RAMSAR. However, the HRA identified the potential for in the Swale SPA & RAMSAR, see the HRA screening report for information.							
Does the compor	nent comply v	vith WFD	Objective					
 No deteriorati classes 	on between	status ,	Yes; no deterioration between status classes					
2. No impediments	to GES/GEP	,	Yes; no impediments to achieving GEP.					
No compromis objectives	ses to water	body	Yes; no compromises to water body objectives.					
4. No effects on ot	her water bod	ies `	Yes; no impact on other water bodies.					
i de la companya de			No; does not assist with the attainment of any mitigation water body objectives.					
6. Assists attainme objectives	ent of protecte		does not assist with the attainment of any mitigation measures uired for the protected areas.					

1.11 Sittingbourne Industrial Water Reuse (IWR_Sit2)

	WFD water body	name	SWALE							
	WFD water body	type	Transitional	Transitional Water						
	WFD catchment	management	Thames TraC			WFD water body ID		GB530604011500		
	River Basin Dist	rict	Thames							
	WFD Designation	ns, Objectives	and Mitigat	ion						
	WFD Status and	RBMP2 Ove	rall Status		Objective (2021)		Obje	ctive (2	027)
φ	Objectives	Moderate			-			-		
po	Hydromorpholo	gical designati	ion		Heavily mod	dified				
Water body	Water Body Mitigation Measure	d mitigation m	neasu	ıres						
	WFD Protected Areas									
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive		Habitats Directive	Nitrate Direct				Urban Waste Water Treatment Directive
	NO	NO	YES		NO	NO		YES		NO
	Scheme potentially affe	components	Construction: N/A							
ping	body	cting water	Operation: 17.5Ml/d reduction in treated effluent inputs to the Swale							
WFD assessment (scoping)	WFD element	RBMP2 (2015) status	Assessed	statu	s (construct	ion and	operation	on)		
ssme	· Fish	Not assessed	Not assessed							flows, as a
SSE	 Invertebrates 	High	High							responsive to
Da	 Macroalgae 	Good	Good	changes in flow than others. Relative abundance of certa					nce of certain	
NF	 Phytoplankton 	High	High							sed freshwater
	· Angiosperms	Not assessed	Not assessed flow. However, the nature of the invertebrate communication part of the tidal river is assumed to be strongly link							



			ambient salinity profile and tidal influence. It is unlikely that the absence of the freshwater discharge will be significant enough to lead to a deterioration in status class for the biology of the Swale.				
Chemical (Overall)	Good	Good	Good There is no risk of chemical status deterioration as consequence of the cessation of effluent inputs to the estua				
waters (th Waters: The water body is associated with two designated shellfish (Swale Central and Swale East Shellfish Waters). However, the small on in freshwater flows to The Swale is not likely to cause any adverse s on these shellfish waters.				
		Medwa identifie	SPA: SAC and RAMSAR: The HRA has identified no potential LSEs on the Medway Estuary and Marshes SPA & RAMSAR. However, the HRA dentified the potential for LSEs on the Swale SPA & RAMSAR, see the HRA creening report for further information.				
Does the compor	nent comply v	vith WF	O Objective				
 No deterioration classes 	on between	status	Yes; no deterioration between status classes				
2. No impediments	s to GES/GEP		Yes; no impediments to achieving GEP.				
3. No compromi objectives	ses to water	body	Yes; no compromises to water body objectives.				
4. No effects on of	ther water bod	ies	Yes; no impact on other water bodies.				
5. Assists attainr objectives	nent of water	body	No; does not assist with the attainment of any mitigation water body objectives.				
6. Assists attainment objectives	ent of protecte	d area	No; does not assist with the attainment of any mitigation measures required for the protected areas.				

1.12 Reservoir at Pulborough (RES_Har): Western Rother

	WFD water body	name	Western Rothe	r	<u> </u>						
	WFD water body	type	River								
	WFD m catchment	anagement	Arun and West	ern Streams	WFD body II	water	GB107041012810				
	River Basin Distr	ict	South East								
	WFD Designation	s, Objective	s and Mitigation	and Mitigation							
	WFD Status	RBMP2 Ove	erall Status	Objective (202	1)	Object	ive (2027)				
	and Objectives	Moderate		-		Good					
dy	Hydromorpholog	ical designa	tion	Not designated	artificial or hea	avily modi	fied				
Water k	Hydromorphological designation Water Body Mitigation Measure Not designated artificial or heavily modified Not designated artificial or heavily modified										
	WFD Protected A Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	s Habitats Directive	Nitrates Directive	Shellfis Directi					
	NO	YES	NO	NO	YES	NO	YES				
		omponents									
WFD	potentially affection	ung water	Operation: New 30Ml/d abstraction in the River Rother to support Pulborough Reservoir								
S	WFD element	RBMP2									



· Fish	Moderate	Modera	Construction of the abstraction intake will be managed by good practice construction methods and any temporary risks to the water body are assessed as low. Temporary effects due to construction will not cause deterioration of the water body. Fish could be entrained in the proposed abstraction intake but this would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and regulatory requirements.					
· Macro- invertebrates	High	High	There is water available for abstraction for part of the year Reduction in flow downstream of abstraction intake would be protected by the Hands-off Flow (HOF) (280MI/d at Pulboroug gauging station). The decrease in flow may adversely affect the river's capacity to buffer phosphate (currently moderate status inputs between the location of the abstraction and confluence with River Arun, understood to be less than 2 km. However, this is not					
· Macrophytes & Phytobentos	Moderate	Modera	deemed sufficient to prompt a between status deterioration for phosphorus due to the small stretch of river which will be impacted. With the hands-off flow conditions set at appropriate levels to safeguard the aquatic environment, there should be no material adverse effects of the abstraction on the water quality or ecology. Overall it is unlikely that deterioration between status classes for fish, macro-invertebrates or macrophytes and phytobenthos will occur.					
Chemical (Overall)	Good	Good	It is unlikely that any change in the chemical status will occur, considering the hands-off flow conditions are set at appropriate levels to ensure no material adverse effects of the abstraction on the water quality.					
		Drinkin	g water protected area: the water body (River Western Rother) is a g Water Protected Area but there is negligible risk of adversely affecting mical status at the water body scale.					
Protected Area D	etails	vulnera sensitiv scheme	t sensitive areas: The water body is associated with a surface water nitrate ble zone under the Nitrates Directive. River Western Rother is a nutrient e area under the Urban Waste Water Treatment Directive. However, the will not affect the management of the protected area and no significant in water quality are expected (controlled via the EA abstraction licence ens).					
Does the compo	nent comply	with WF	D Objective					
No deterioration classes	n between sta	Ye	s; no deterioration between status classes.					
2. No impediments to GES/GEP Yes;			s; no impediments to GES.					
3 No compromises to water hody			s; no compromises to water body objectives.					
			s; no effects on other water bodies.					
Assists attainment objectives		, INC	; does not assist with the attainment of water body objectives.					
6. Assists attainmarea objectives	ent of protect	cted No	does not assist with the attainment of protected area objectives.					

1.13 Reservoir at Pulborough (RES_Har): Arun

	WFD water body na	ame	ARUN							
	WFD water body ty	ре	Transitional Wate	Transitional Water						
body	WFD management catchment		South East TraC		WFD water body ID		GB540704105000			
Water	WFD Designations	, Objectives	and Mitigation							
>	WFD Status and RBMP2 Ov		erall Status	Objective (2021)		Obje	ective (2027)			
	Objectives Moderate			-		Goo	Good			
	Hydromorphological designation			Heavily modified						



	Water Body Mitigation Measure	No publishe	d mitigation m	easu	res								
Ī	WFD Protected Are	eas											
	Bathing Water Directive	Drinking Water Directive	Conservatio of Wild Bi Directive		Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive					
	NO	YES	YES		YES	NO	NO	NO					
	potentially affect	omponents ing water	Construction				the tidal River	Arun to support					
	body						flows in the Rot						
	WFD element	RBMP2 (2015) status		Assessed status (construction and operation)									
	· Fish	Not						by good practice					
	· Invertebrates	Not assessed	Not assessed	are a	assessed as	low. Tempora	ary effects due	s to the water body to construction will could be entrained					
	· Macroalgae	High	High	not cause deterioration of the water body. Fish could be entrained in the proposed abstraction intake but this would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and regulatory requirements.									
	· Phytoplankton	Not assessed	Not assessed										
WFD assessment (scoping)	· Angiosperms	Not assessed	Not assessed	There is a low risk of adverse impacts on the water quality within the tidal River Arun due to the new 20Ml/d abstraction. The water quality in the tidal Arun is already heavily influenced by effluent returns from various WwTWs. The abstraction may have a local impact on the river's capacity to buffer inorganic inputs. However, this is deemed insufficient to prompt a deterioration in dissolved inorganic nitrogen (DIN) status. The reduction in flows could impact upon impact invertebrates, which are not currently assessed. The macroalgal community in this transitional water body will be adapted to a cycle of exposure and submersion Therefore, the risk of deterioration between									
WFD	Chemical	Good	Good	status classes is low.									
	(Overall) Protected Area Det		Good There is no risk of deterioration between chemical status classes. Drinking water protected area: the water body (River Arun) is a Drinking Water Protected Area but there is no risk of adversely affecting the chemical status at the water body scale. Furthermore, Southern Water will want to ensure no risks to its drinking water supplies										
	Does the compone												
	No deterioration status classes		, , , , , , , , , , , , , , , , , , ,		tion between	status classe	es.						
	2. No impediments t		Yes; no impe	edime	ents to GEP.								
	3. No compromise body objectives		Yes; no com	prom	nises to water	body objecti	ves.						
	4. No effects on bodies		Yes; no effec	cts or	n other water	bodies.							
	5. Assists attainmed body objectives		No; does not	t assi	st with the at	tainment of w	ater body objec	tives.					
	Assists atta protected area object	inment of ctives	No; does not	t assi	st with the at	tainment of p	rotected area ol	ojectives.					



1.14 Stourmouth WSW (SWA_Plu20)

				OVV (SVVA	<u> </u>	1420)							
	WFD water boo			STOUR (KENT)									
	WFD water boo		•	ransitional Water	r			WFD w	ator				
	catchment	ieni	. 8	South East TraC				body IE		GB520	704004700		
	River Basin Di	stric	et S	South East									
				WFD Designation	ons	, Objectives a	Objectives and Mitigation						
	WFD Status an	nd	RBMP	2 Overall Status		Objective (2021)			Objective (2027)				
>	Objectives			Poor		-	•			Mod	erate		
рос	Hydromorphol	ogic	cal designa	ition		Heavily modi	fied						
Water body	Water Body Mitigation Measure		No publisl	ned mitigation me	easui	res							
				WF	D P	rotected Area	as						
	Bathing Water Directive	Wa	inking ater rective	Conservation of Wild Bird Directive		Habitats Directive	Nitra Direc			ellfish ective	Urban Waste Water Treatment Directive		
	NO	ΥE	S	YES		YES	YES		NO		YES		
	Scheme componentially affection				Construction: New abstraction intake, new WTW Operation: New 10 – 20 Ml/d abstraction from the tidal River Stour								
	WFD element	RBMP2 (2015) status			sessed status								
	· Fish		Not	Not assessed	Construction of the abstraction intake and new WTW will b managed by good practice construction methods such that an								
	assessed Not			Not	risk to the water body is low. Temporary effects due								
	· Invertebrates	· · · · · ·	assessed	assessed	construction are unlikely to cause deterioration of the w body. Fish could be entrained in the proposed abstraction in but this would be mitigated with appropriate screening of intake structure in accordance with best practice guidance regulatory requirements.								
(6	· Macroalgae		High	High							creening of the		
WFD assessment (scoping)	· Phytoplankto	n	Poor	Poor	The eco	ere is a pote ology of the ti- straction near duce the propo	ential ri dal Gro Stour ortion o	isk of a eat Stou mouth. f freshw	ır as a The ind ater in t	conseque creased a he river a	on the aquatic ence of the new abstraction may nd lead to saline		
assessi	· Angiosperms	;	Not assessed	Not assessed	the of	freshwater floodeterioration in	ow ent n ecolo	tering th	e estua atus is o	ary and th considere			
FD	Chemical (Overall)		Good	Good			igible	risk of	deterio	ration be	tween chemical		
W	(Overall) Protected Area Details			Protected Area the water body: Nutrient sensitive vulnerable zone area under the affect the mana are expected. SPA and SAC SAC. Howeve	Drinking water protected area: the water body (Great Stour) is a Drinking Water Protected Area but there is negligible risk of adversely affecting the chemical status at the water body scale Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. Great Stour River is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected. SPA and SAC: The HRA has identified no potential LSEs on the Thanet Coast SAC. However, the HRA identified the potential for LSEs on the Sandwich Bay								
				SAC, the Sto							Thanet Coast & nformation.		



Does the component comply with \	Does the component comply with WFD Objective										
No deterioration between status classes	Yes; no deterioration between status classes.										
2. No impediments to GES/GEP	Yes; no impediments to GEP.										
3. No compromises to water body objectives	Yes; no compromises to water body objectives.										
4. No effects on other water bodies	Yes; no effects on other water bodies.										
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.										
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.										

1.15 Lewes Road (AE_LEW)

	W	FD water body	name	Brig	ghton Chalk	Block				WFD body		GB40	GB40701G502500	
	W	FD water body	type	Gro	undwater					River				
		FD mana tchment	agemen	t Sou	outh East GW					Distric		South East		
	W	FD Designatio	ns, Obj	ectives	and Mitiga	ation								
		FD Status	RBMP:	2 Over	verall Status Objective (2021)						Objec	tive (2	027)	
<u>></u>	an	nd Objectives	Poor			-					-			
Water body	Mi	ater Body itigation easure	olished	I mitigation measures										
		WFD Protect	ed Area	s										
		Bathing Water Directive	Drinki Water Direct	_	Conserva of Wild Directive	Birds	_	abitats rective	Nitra Direc		Shellfish Directive		Urban Waste Water Treatment Directive	
		NO	YES		NO		NC	O YES			NO		NO	
	Sc	cheme compo	Const	truction: N/	′A									
		otentially affe ater body	Opera		ase abs	strac	ction to re	ach fu	Il licenc	ed volu	ımes -	- 1.6Ml/d assumed		
	W	FD Status Tes	RBMP2 (2015) status	Assessed status (construction and operation)										
ing)	Q	uantitative (Ov	erall)		Poor									
doos)		ependent Sur ody Status	rface	Nater	Poor	Poor		water bo	dies.		•	•	dependent surface	
nent	G۱	NDTEs test			Good	Good		There are in the pro					2000 GWDTE sites	
SSE	Sa	aline Intrusion			Good	Good		There is	no risk	of salin	of saline intrusion.			
WFD assessment (scoping)	W	ater Balance			Poor	Poor		a ground status.	lwater	body sc	ale but	the wa	e water balance on ater body is at poor	
×	Cł	nemical (Overa		Poor	Poor		Negligible risk of deterioration in chemical status at a groundwater body scale.							
	Pr	otected Area I	Details		Drinking V chemical s	Vater P status a	rote t the	cted Area groundwa	but th ater bo	ere is r dy scal	no risk o e.	of adve	Chalk Block) is a ersely affecting the with a groundwater	
													er, the scheme will	



	not affect the management of the protected area and no significant changes in water quality are expected.
Does the component comply w	vith WFD Objective
No deterioration between status classes	Yes; no deterioration between status classes.
2. No impediments to Good Status	Yes; no impediments to Good Status.
3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no effects on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.

1.16 Re-commissioning of Test valley WSW (BR_Bro): River Test Chalk

	\^/	ED waterbody	nama	River Test Chalk			WFD	hody	CB407	7010501200			
	VV	FD waterbody	name	River Test Chaik			water	body	GB407	701G501200			
		FD waterbody		Groundwater	Groundwater					F4			
		FD m tchment	nanagement	South East GW		District		South East					
	W	FD Designation	ns, Objective	s and Mitigation	and Mitigation								
		FD Status	RBMP2 Ove	rall Status	Objective (2021)		Objec	tive (202	27)			
dy	an	d Objectives	Poor		-			Good					
Waterbody	Mi	ater Body itigation easure	No published	l mitigation measu	nitigation measures								
		WFD Protect											
		Bathing Water Directive	Drinking Water Directive	Conservatio n of Wild Birds Directive	Habitats Directive		Nitrates Directive		fish tive	Urban Waste Water Treatment Directive			
		NO	YES	NO	NO	YES		NO		NO			
		Scheme components		Construction:	N/A	•							
		otentially aterbody	affecting	Operation: Recommission Test Valley BH – 4.5Ml/d assumed output									
ing)	W	FD Status Test	t	RBMP2 (2015) status	Assessed status (construction and operation)								
doo	Qı	uantitative (Ov	erall)	Good									
assessment (scoping)		ependent Surfac atus	ce Water Body	Good	Uncertain	There is one dependent surface water boo which may be impacted by this abstraction Wallop Brook (GB107042022650). separate assessment is provided below.							
WFD asse	G۱	NDTEs test		Good	Good	GWD	There are no known SSSI or Natura: GWDTE sites in the proximity of abstraction.						
×	Sa	aline Intrusion		Good	Good				line intru				
	W	ater Balance		Good	Good	The abstraction is unlikely to affect the water balance on a groundwater body scale.							
	Cł	nemical (Overa	ıll)	Poor	Poor				eteriorati ter body	on in chemical scale.			



Protected Area Details	Drinking water protected area: the water body (River Test Chalk) is a Drinking Water Protected Area but there is negligible risk of adversely affecting the chemical status at the groundwater body scale. Nutrient sensitive areas: The water body is associated with a groundwater nitrate vulnerable zone under the Nitrates Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected.							
Does the component comply w	rith WFD Objective							
No deterioration between status classes No impediments to	Uncertain; there is a potential risk of deterioration between status classes, further assessment needed.							
GES/GEP 3. No compromises to water body objectives	Yes; no compromises to water body objectives.							
4. No effects on other water bodies	Yes; the abstraction has the potential to impact on Wallop Brook (GB107042022650), but is assessed separately below as being unlikely.							
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.							
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.							

1.17 Re-commissioning of Test valley WSW (BR_Bro): Wallop **Brook**

	Block											
	WFD water body n	ame	Wallop Brook									
	WFD water body ty	/pe	River									
	WFD management	catchment	Test and Itchen	WFD waterbody ID		GB107042022650						
	River Basin Distric	:t	South East									
	WFD Designations	, Objectives a	nd Mitigation	d Mitigation								
	WFD Status and	RBMP2 Over	all Status	Objective (20	21)		Objec	tive (20	027)			
ار اح	Objectives	Good		-			-					
poq	Hydromorphologic	al designation	1	not designate	d artifici	al or he	avily mo	odified				
Waterbody	Water Body Mitigation Measure	No published	mitigation measul	res								
	WFD Protected Areas											
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitrates Directive		Shellfish Directive		Urban Waste Water Treatment Directive			
	NO	NO	NO	NO	YES		NO		NO			
g)	Scheme	components	Construction: N/A									
opin	potentially affecting	g waterbody	Operation: Recommission Test Valley BH – 4.5MI/d assumed output									
assessment (scoping)	WFD element	RBMP2 (2015) status	Assessed statu	us (construction	n and o	peratio	n)					
sessm	· Fish	Not assessed	Not assessed						ws in the Wallop			
WFD ass	 Macro- invertebrates 	High	Uncertain	reduced and i	minor ii	npacts	on its	ecolo	ne flow could be gy could occur. between status			
M	· Macrophytes & Phytobentos	Good	Uncertain	classes will occ								



Chemical (Overall)	Good	Good		There is negligible risk of deterioration between chemical status classes.					
Protected Area Details Nutrient nitrate vinot affection affection in the control of the control				nt sensitive areas: The water body is associated with a surface water vulnerable zone under the Nitrates Directive. However, the scheme will fect the management of the protected area and no significant changes in quality are expected.					
Does the compone	ent comply wit	h WFD O	bjective						
1. No deterioration	between status	classes	Uncert	Uncertain; potential for deterioration between status classes; further					
2. No impediments	to GES/GEP		assessment required						
3. No compromobjectives	ses to wate	r body	Yes; no compromises to water body objectives.						
4. No effects on oth	er water bodies	;	Yes; no impacts on other water bodies.						
5. Assists attainment of water body objectives				No; does not assist with the attainment of water body objectives.					
6. Assists attainm objectives	ent of protecto	ed area	No; does not assist with the attainment of protected area objectives.						

1.18 Fawley Desalination (DES_FAW50, DES_Faw150 and **DES_Faw200): Southampton Water**

	WFD water body												
	WFD water body			SOUTHAMPT Transitional W									
	WFD managemen		chment	South East Tra	аС		WFD body		GB5	520704202800			
	River Basin Distr	ict		South East									
			WF	Designations, Objectives and Mitigation									
	WFD Status and		RBMP2 O	verall Status	Objectiv	e (2021)	(Objec	tive (2027)			
	Objectives			derate	-	-				-			
ody	Hydromorpholog	ical c	lesignation		Heavily modific	ed							
Water body	Water Body Mitigation Measu	re	No publishe	ed mitigation me	d mitigation measures								
				WFD P	rotected Areas	6							
	Bathing Water Directive Drinking Water Directive			Conservation of Wild Birds Directive	Habitate	Nitrates Directive		Shellfish Directive		Urban Waste Water Treatment Directive			
	NO	NO		YES	YES YES			YES		YES			
	Scheme compone		potentially	Construction: New abstraction intake Operation: New abstraction from Southampton Water - (up to 200Ml/d									
βυ				DO)									
(scopi	WFD element		RBMP2 (2015) status	Assessed status (construction and operation)									
WFD assessment (scoping)	· Fish		Good	Good	Construction of the abstraction intake will be manage good practice construction methods and any temporary to the water body are assessed as low. Temporary edue to construction will not cause deterioration of the								
WFD	· Invertebrates		Good	Good	body. Fish cointake but this	uld be e would be structur	entraine e mitiga re in a	d in the ted with ccordan	propo appro ce wi	osed abstraction opriate screening the best practice			



· Macroalgae	Good	Good	There is a low risk of adverse impacts on water quality within the Southampton Water due to the new abstraction. The abstraction is situated close to the mouth of the estuary and therefore the abstraction is not expected to prompt a deterioration in dissolved inorganic nitrogen (DIN) status.					
· Phytoplankton	High	High	The abstraction may prompt changes in flow regime and these are likely to have some impact on invertebrates and macroalgae. However, any impacts will be localised and given the size of the estuary at the point of abstraction, any changes will not be sufficient to prompt deterioration					
· Angiosperms	Good	Good	between status classes at a water body scale. Furthermore, the macroalgal community in this transitional water body will be adapted to a cycle of exposure and submersion. Timing the abstraction to avoid low tides would further mitigate any possibility of impact.					
Chemical (Overall)	Fail	Fail	The risk of deterioration of chemical status is assess negligible and the water body already fails to achieve chemical status.					
Protected Area Details		nitrate vu a nutrient However, and no si Shellfish the Sou Southam Saltmarsh in any cas SPA and on the So report co unlikely to and winte It is ther operation favourabl qualifying	ensitive areas: The water body is associated with a surface water nerable zone under the Nitrates Directive. (Southampton Water) is sensitive area under the Urban Waste Water Treatment Directive, the scheme will not affect the management of the protected area unificant changes in water quality are expected. Waters: The existing abstraction point for Fawley operates within hampton Water Shellfish Water and the approaches to ton Water Shellfish Water : Areas of saltmarsh are present in Southampton Water WFD by some distance from the boundary of The Solent WFD WB. The community here is unlikely to be affected by the scheme and will be be adapted to a cycle of exposure and submersion. SAC: The HRA Stage 1 screening identified the potential for LSEs ent Maritime SAC and the Southampton Water SPA. The Stage 2 included that the minor potential increase in salinity would be have any significant effect upon floral and invertebrate species ing and breeding bird species associated with the designated site affore considered highly unlikely that the indirect effects of the all desalination plant would have any significant effect upon the conservation status of wintering and breeding birds which forms features of the designated site.					
Does the component of								
1. No deterioration betw			es; no deterioration between status classes.					
No impediments to G No compromises to v objectives			es; no impediments to achieving GEP. es; no compromises to water body objectives.					
4. No effects on other w	ater bodies	Y	es; no impact on other water bodies.					
Assists attainment of objectives		O	No; does not assist with the attainment of any mitigation water body objectives.					
6. Assists attainment of objectives	protected are		No; does not assist with the attainment of any mitigation measures required for the protected areas.					



1.19 Fawley Desalination (DES_Faw50, DES_Faw150 and DES_Faw200): Solent

		name	Solent						1				
	WFD water body WFD water body		Coastal Wate	r									
		nanagement				WFD v	vater	0555	705456555				
	catchment	nanagomon.	South East Ti	raC		body ID			705150000				
	River Basin Dist	rict	South East										
	WFD Designatio	ns, Objective	s and Mitigatio	and Mitigation									
	WFD Status a	nd RBMP2 (Overall Status		Objective (2021)	OI	ojective	(2027)				
	Objectives	Moderate			-	,	-		,				
ody	Hydromorpholog	gical designa	tion										
Water body	Water Body Mitigation Measure	No published	mitigation mea	mitigation measures									
	WFD Protected Areas												
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bi Directive		Habitats Directive	Nitrates Directive		Ilfish ective	Urban Waste Water Treatment Directive				
	YES	NO	YES		YES	YES	YES	3	YES				
		components	Construction	1: N	ew discharge out	fall							
	potentially affe	Operation: New discharge of brine (for a 200Ml/d output) from and back into the Solent											
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)										
(scoping)	· Fish	Not assessed	Not assessed	Construction of the discharge outfall will be managed by good practice construction methods and any temporary risks to the water body are assessed as low. Temporary effects due to construction will not cause deterioration of the water body There is potential for the new discharge of briny waters (via the currently disused Fawley Power Station) to impact the aquatic ecology of the Solent. Near field modelling indicates that the maximum discharge rate for a 200Ml/d plant, would reach equilibrium with surrounding water (10% above ambient salinity) at 50.09m from the outfall pipe. This was the maximum distance									
	 Invertebrates 	Good	Good		ielded by the mo								
sme	 Macroalgae 	Not	Not	W	ith spring tide at	low water slad	ck con	ditions. 5	0.09 m, equates				
WFD assessment	Phytoplankton	Not assessed	Not assessed	d	o the radius of a ischarge velocity ould not be ex	and tidal mo	oveme	ent etc, t	he saline plume				
WFD	· Angiosperms	Not assessed	Not assessed	would not be expected to disperse in a circular pattern. Therefore, the figure of 1ha provides an over-estimate of the worst-case scenario for the area that could be subject to salinity levels of 10% above ambient. This is less than 0.004% of the surface area of the WB (25,598ha). The results of far field salinity modelling indicate that the maximum salinity uplift above ambient within the proximity of the discharge (at proposed maximum discharge rate) is 1.15 PSU (Practical Salinity Units). This would equate to a salinity uplift above ambient of 3.4%. This value drops by more than half within 500m. The EC Directive threshold for discharges affecting shellfish waters is 10%. The new discharge may affect the localised distribution of invertebrate communities but this is unlikely to have a major effect on fauna across most of the water body. Any impact is									



	expected to be largely proportional to the discharge volumes and will ultimately depend on the option variant to be implemented.						
			Given these data, it is thought highly unlikely that a hypersaline plume originating in The Solent would raise salinity levels to the point where WFD deterioration could result (due to impacted ecology elements).				
Chemical (Overall)	Fail	Fail	The risk of deterioration of chemical status is assessed as negligible and the water body already fails to achieve good chemical status.				
		nitrate vulnera sensitive area scheme will no	tive areas: The water body is associated with a surface water ble zone under the Nitrates Directive. The Solent is a nutrient under the Urban Waste Water Treatment Directive. However, the of affect the management of the protected area and no significant ter quality are expected.				
		Shellfish Waters: The existing discharge point for Fawley is located within Stanswood Bay designated Shellfish Water, located in the Solent WFD Coastal WB. It was estimated from the near field modelling that the plume would equate to an area <0.2% of the surface area of the Stanswood Bay Shellfish Water.					
Protected Area Details		Bathing Waters: there is one bathing water located near Fawley, Calshot. The discharge outfall will be a significant distance from the shore and will not impact upon bathing water quality.					
		SPA and SAC: The HRA Stage 1 screening identified the potential for LSEs on the Solent Maritime SAC and the Southampton Water SPA. The Stage 2 report concluded that the minor potential increase in salinity would be unlikely to have any significant effect upon floral and invertebrate species and wintering and breeding bird species associated with the designated site. It is therefore considered highly unlikely that the indirect effects of the operational desalination plant would have any significant effect upon the favourable conservation status of wintering and breeding birds which forms qualifying features of the designated					
Does the compone	ent comply w	ith WFD Obje	ctive				
1. No deterioration classes	between statu	Yes; no de	eterioration between status classes				
2. No impediments			pediments to achieving GEP.				
No compromises objectives	s to water bod	Yes; no co	ompromises to water body objectives.				
4. No effects on oth			pact on other water bodies.				
Assists attainment objectives		No; does i	lo; does not assist with the attainment of water body objectives.				
6. Assists attainme area objectives	ent of protecte	No; does r	not assist with the attainment of protected area objectives.				

1.20 Camber (Rye) Desalination near Rye Bay (DES_Cam5 and DES_Cam10): Rother

	WFD water bod	y name	ROTHER							
	WFD water bod	y type	Transitional Wat	Transitional Water						
	WFD ma			;	WFD water body ID	GB540704016100				
body	River Basin Dis	trict	South East							
Water b	WFD Designation	ons, Objecti	ves and Mitigatio	es and Mitigation						
Nat	WFD Status	RBMP2 Ov	erall Status	Ob	jective (2021)	Objective (2027)				
	and Objectives	Moderate	derate			-				
	Hydromorphological designation		nation	Heavily modified						
	No published mitigation measures									



	Water Body Mitigation Measure										
	WFD Protected	Areas									
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bir Directive	Habitate	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive				
	NO	NO	YES	YES	YES	NO	NO				
	Scheme con potentially water body	mponents affecting		Construction: Desalination plant and new abstraction intake Operation: New abstraction from tidal River Rother – up to 10MI/d assumed output							
	WFD element	RBMP2 (2015) status		Assessed status (construction and operation)							
	· Fish	Not assessed	Not assessed	practice constru	ction methods	and any tempora	managed by good ary risks to the water				
	· Invertebrates	Not assessed	Not assessed	will not cause	body are assessed as low. Temporary effects due to construing will not cause deterioration of the water body. Fish cou						
	 Macroalgae 	High	High (uncertain)	mitigated with	reening of the	ke but this would be ne intake structure in					
	· Phytoplankton	High	High (uncertain)	accordance with best practice guidance and reg requirements							
WFD assessment (scoping)	· Angiosperms	Not assessed	Not assessed	There is the potential for the new abstraction to impact upon aquatic ecology of the tidal Rother. Depending on the volunt tidal water abstracted relative to in-river flow, the abstraction result in potential impacts upon biological communities included macroalgae and phytoplankton. It is not certain whether the result in potential to a deterioration in status of these producers from the High status reported in 2015. For investigation is required to assess the scheme with greater cerbut measures such as timing of abstraction relative to tidal could mitigate any ecological impact.							
sessi	Chemical (Overall)	Good	Good	The risk of de assessed as ne		tween chemical	status classes is				
WFD a	SPA and Some or the Hast Dungeness information Protected Area Details Nutrient se vulnerable			AC: The HRA has identified no potential for LSEs on the Dungeness SAC ng SAC. However, the HRA has identified the potential for LSEs on the Romney Marsh SAC, see HRA stage 1 screening report for further nsitive areas: The water body is associated with a surface water nitrate zone under the Nitrates Directive. However, the scheme will not affect ement of the protected area and no significant changes in water quality							
	Does the compo	nent comp	y with WFD O	bjective							
	 No deteriora classes 	ation betwe	U		a potential risk	of deterioration,	further assessment				
	2. No impedimen		EP	s needed.							
	No compror objectives		Ť	es; no compromis							
	4. No effects on o			es; no impact on o	other water bod	lies.					
	5. Assists attainment of water body objectives			No; does not assist with the attainment of water body objectives.							
	6. Assists attainr objectives	ment of prot		No; does not assist with the attainment of any mitigation measures required for the protected areas.							

1.21 Camber (Rye) Desalination near Rye Bay (DES_Cam5 and DES_Cam10): Sussex East

≥ ਵ ਰ WFD water body name Sussex East



	WFD water bo	dy type	Coastal Water									
	WFD water bo	management				WFD	water	000	40704540000			
	catchment	_	South East Tra	<u> </u>		body I	D	GB6	40704540002			
	River Basin Di		South East									
	WFD Designat	ions, Objective	es and Mitigatio	s and Mitigation								
	WFD Status	RBMP2 Overa	II Status	Objective (202	21)		Objec	tive (2	027)			
	and Objectives	Moderate		-			Good					
		logical designa	ation	Heavily modifie	ed							
	Water Body Mitigation Measure	No published r	nitigation measu	itigation measures								
	WFD Protecte	d Areas										
	Bathing Drinking Water Directive Directive		Conservation of Wild Birds Directive	Habitats Directive	Nitrate Direct			_	Urban Waste Water Treatment Directive			
	YES	NO	YES	YES	NO		NO		NO			
	Scheme potentially aff body	components fecting water	Operation: Ne 10Ml/d assume	w discharge of l		long se	a outfall	to coa	astal waters – 5-			
	WFD element	RBMP2 (2015) status		status (construction and operation)								
	· Fish	Not	Not	Construction of the discharge outfall will be managed by g practice construction methods and any temporary risks to								
	· Macro- invertebrates	Good	Good	water body are assessed as low. Temporary effects due construction will not cause deterioration of the water body.								
WFD assessment (scoping)	· Macrophyte & Phytobentos		Not assessed	equilibrium wi salinity) would was the maxim discharge volu this case with some carea of <0.04h tidal movement to disperse in a the figure of 0 case scenario levels of 10% a surface area of subject to raise therefore less a shellfish water determine the over time on each of the sellinity levels of any local impairs slight risk would would would be sellinity levels of any local impairs slight risk would would would would be sellinity levels of any local impairs slight risk would would would would be sellinity levels of the sellit	th surrouse the surrouse to a circula a circul	ounding ned at 10 ance yie elled for de at low acce area e saline r patterr rovides area the hibient. The sex Earty levels effect cond WFD in a ting fee Susseplogy cally be e	water 0.43m fro elded by this sch water s ates to the a. Given plume v an over- at could his is les as of <10 eshold fo estigation of slightly 0 status. bught h from the ex East v used a v xpected	(10% om the meme, of slack of the rad discharge would fore, crestimal would fore, crestimal would graise would graise would graise would by raise would graise wo	rge rate of 5MI/d, above ambient outfall pipe. This nodel at the only corresponding in onditions. It is of a circular arge velocity and not be expected rudely speaking, ate of the worstubject to salinity no.0003% of the er area would be ever ambient and ity discharges to do be needed to be a salinity levels unlikely that a large would raise the point where eterioration. Any uce according to discharge rates			
	Chemical (Overall)	Good	Good	The risk of deterioration between chemical status assessed as negligible.					status classes is			



Protected Area Details	2 km fr a result	Bathing water: The proposed discharge is understood to be approximately 1-2 km from Camber designated Bathing Water. There should be no impact as a result of the hypersaline effluent. SPA: The HRA has identified the potential for LSEs on the Dungeness Romney Marsh SPA, see HRA screening report for further information.								
Does the component comply with WFD Objective										
 No deterioration between classes 	status	Yes; no deterioration between classes or impediments to GES/GEP.								
2. No impediments to GES/GE	Р	Yes; no impediments to GEP.								
No compromises to water objectives	r body	Yes; no compromises to water body objectives.								
4. No effects on other water bo	dies	Yes; no impact on other water bodies.								
Assists attainment of water objectives	er body	No; does not assist with the attainment of water body objectives.								
6. Assists attainment of protect objectives	ed area	No; does not assist with the attainment of protected area objectives.								

1.22 Desalination Test Estuary with brine discharge into Solent via Fawley outfall (DES_Mar50, DES_Mar150 and DES_Mar200): Southampton Water

	LO_IMAI Z									
	WFD water body	/ name	SOUTHAMP	TON WATER						
	WFD water body	/ type	Transitional \	Transitional Water						
	WFD manageme	ent catchment	South East T	South East TraC				GB5	20704202800	
	River Basin Dist	rict	South East	South East						
	WFD Designation	ns, Objectives	and Mitigation	nd Mitigation						
	WFD Status	RBMP2 Overa	all Status	Objective (20	21)		Objec	tive (2	2027)	
ybc	and Objectives	Moderate		-			-			
r be	Hydromorpholo	gical designati	on	Heavily modific	ed					
Water body	Water Body Mitigation Measure	No published r	mitigation meas	ures						
	WFD Protected Areas									
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Hahitate	Nitrate Direct		Shellfish Directive		Urban Waste Water Treatment Directive	
	NO	NO	YES	YES	YES		YES		YES	
	Scheme	components	Construction: New abstraction intake							
ping)	potentially aff body	ecting water	Operation:	Operation: New abstraction from Southampton Water - up to 200Ml/d assumed output						
ent (sco	WFD element	RBMP2 (2015) status	Assessed s	Assessed status (construction and operation)						
sme	· Fish	Good	Uncertain							
es	 Invertebrates 	Good	Uncertain	Construction of	of the al	netractic	n intak	a will	he managed by	
WFD assessment (scoping)	· Macroalgae	Good	Good	Construction of the abstraction intake will be managed by good practice construction methods and any temporary risks to the water body are assessed as low. Temporary effects due to construction will not cause deterioration of the water body.						
				body.						



· Phytoplankton	· Phytoplankton High		Fish could be entrained in the proposed abstraction intake but this would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and regulatory requirements. There is a potential risk of deterioration in status class for invertebrates and fish as a result of the new abstraction from Southampton Water (and the tidal Test). Any potential risks are exacerbated by the fact that the abstraction is located in a narrow part of the water body, upstream of the confluence with the River Itchen. This change in flow regime may adversely impact fish populations and invertebrate communities, if they are especially sensitive to flow changes.					
· Angiosperms	angiosperms Good		The severity of impact is currently uncertain; however, it is expected that this will be proportional with the reduction in flows. Further assessment is therefore needed.					
Chemical (Overall)	Fail	Fail	The risk of deterioration of chemical status is assessed negligible and the water body already fails to achieve go chemical status.					
Protected Area De		nitrate vu is a nutr Directive. protected Saltmarsl within So proposed but there Shellfish the WFD SPA, SAC Solent M Coast SP						
Does the compone								
No deterioratio classes	n between s		certain; there is a potential risk of deterioration; further					
2. No impediments t	to GES/GEP		sessment required. s; no impediments to achieving GEP.					
3. No compromise objectives		hody	s; no compromises to water body objectives.					
4. No effects on other water bodies			Yes; no impact on other water bodies.					
5. Assists attainment objectives		obj	No; does not assist with the attainment of any mitigation water body objectives.					
6. Assists attainmer objectives	nt of protected		does not assist with the attainment of any mitigation measures uired for the protected areas.					



1.23 Desalination Test Estuary with brine discharge into Solent via Fawley outfall (DES_Mar50, DES_Mar150 and DES_Mar200): Solent

	WED water hady name Colont												
	WFD water body			Solent									
	WFD water body		е	Coastal Wate	er		1	WED	-4-				
	WFD manageme	nt		South East TraC				WFD wa			GB650705150000		
	River Basin Dist	rict		South East Tac body ID									
	WFD Designatio	ns,		and Mitigation									
	WFD Status and	-		verall Status		Objective	e (2021)				jective ((2027)	
ody	Objectives		Moderate							-			
ğ	Hydromorpholo	gica	il designat	ion	неа	vily modific	ed						
Water body	Water Body Mitigation Measure	No	published	mitigation mea	tigation measures								
	WFD Protected	Area	as										
	Bathing Water Directive	Wa Dir	inking ater rective	Conservatio n of Wild Birds Directive	Ha Di	abitats rective	Nitrate Direct			ellfis ectiv		Urban Waste Water Treatment Directive	
	YES	NC)	YES		ES	YES		YES	S		YES	
	Scheme compor	nent	s	Construction	n: N/	A – existino	g outfall						
	potentially affecting water body			Operation: Discharge of brine (up to 200Ml/d depending on option) to the Solent									
	WFD element	(RBMP2 (2015) status	Assessed	statu	tatus (construction and operation)							
	· Fish		Vot	Not There is potential for the new discharge of briny water									
	· Invertebrates	_	assessed Good	Good	currently disused Fawley Power Station) to impact the aquatic ecology of the Solent, although this is likely to be restricted to								
			Not	Not		an area of <1ha (see near field modelling below). This assumes that risk of deterioration can generally be discounted below a 10% increase in ambient salinity levels (regardless of duration), based on the EC threshold for salinity discharges to shellfish							
	 Macroalgae 		assessed	assessed									
	 Phytoplankton 		Vot	Not									
ing)	1 Hytopianitton	8	assessed	assessed								lised distribution	
WFD assessment (scoping)		assessed			of ef to uli	invertebra fect on fau be largely timately de ear field mo 200Ml/d, nbient salii	te comm na acros y propor pend on odelling i equilibri nity) wou	nunities best most of tional to the option andicates um with ald be rea	ut the the n va	is is WB disc riant at a ound d at	unlikely . Any implements to be implemented in the maximum ding wat 50.09m	to have a major pact is expected olumes and will aplemented. m discharge rate ter (10% above from the outfall by the model at	
×	- Angiosperms I		Not Not assessed		this discharge volume, corresponding with spring tide at low water slack conditions. A slightly greater distance of 53.55m was yielded at 150Ml/d. This may be due to there being slightly greater uncertainty in the model at reduced discharge rates (50Ml/d and 100Ml/d were not modelled). 53.55m, equates to the radius of a circular area of <1ha in surface area. Given discharge velocity and tidal movement etc, the saline plume would not be expected to disperse in a circular pattern. This is less than 0.004% of the surface area of the WB (25,598ha). A wider area would be subject to raised salinity levels of <10% above ambient and therefore less than the EC								
												waters. Further ne chronic effect	



		of slightly raised salinity levels over time on ecology and WFD status.				
		The results of far field salinity modelling indicate that the maximum salinity uplift above ambient within the proximity of the discharge (at proposed maximum discharge rate) is 1.15 PSU (Practical Salinity Units). This would equate to a salinity uplift above ambient of 3.4%. This value drops by more than half within 500m. The EC Directive threshold for discharges affecting shellfish waters is 10%. Further to this, any slight risk would be expected to reduce according to the volume of brine discharged, with lower discharge rates resulting in lower risk.				
		Given these data, it is thought highly unlikely that a hypersaline plume originating in The Solent would raise salinity levels to the point where WFD deterioration could result (due to impacted ecology elements). Any slight risk would generally be expected to reduce according to the volume of brine discharged, with lower discharge rates resulting in lower risk.				
Chemical (Overall)	Fail	The risk of deterioration of chemical status is assessed as negligible and the water body already fails to achieve good chemical status.				
Protected Area Details	nitrate vulnera sensitive area scheme will no changes in wa Shellfish Wate Stanswood Ba WB. Near field discharge pipe equates to an Water. Bathing Water discharge outfi	tive areas: The water body is associated with a surface water able zone under the Nitrates Directive. The Solent is a nutrient under the Urban Waste Water Treatment Directive However, the of affect the management of the protected area and no significant ter quality are expected. Pers: The existing discharge point for Fawley is located within by designated Shellfish Water, located in the Solent WFD Coastal I modelling indicates that for a distance of up to 53.55m from the expected area of the Stanswood Bay Shellfish area <0.2% of the surface area of the Stanswood Bay Shellfish se: There is one bathing water located near Fawley, Calshot. The all will be a significant distance from the shore and will not impact				
	upon bathing water quality. SPA, SAC and RAMSAR: The HRA has identified no potential LSEs on the Solent & Southampton Water SPA and the Solent Maritime SAC. However, the HRA identified potential for LSEs on the River Itchen SAC, see the HRA screening report for further information					
Does the component comply v		ctive				
No deterioration between stat classes	Yes; no de	eterioration between status classes				
2. No impediments to GES/GEP		pediments to achieving Good Ecological Potential				
No compromises to water boo objectives A No effects on other water.	Yes; no co	empromises to water body objectives.				
4. No effects on other water bodies		mpact on other water bodies.				
5. Assists attainment of water body objectives	objectives					
6. Assists attainment of protecte area objectives		No; does not assist with the attainment of any mitigation measures required for the protected areas.				



1.24 Isle of Sheppey Desalination Plant (DES_loS10 and DES_loS20)

	WFD water body	name	MEDWAY							
	WFD water body		Transitional Wa	ater						
		nanagement			WED	to a book a ID	CDE20004	000000		
	catchment	_	Thames TraC		WFD wat	er body ID	GB530604	002300		
	River Basin Distr	ict	Thames							
	WFD Designation	ns, Objectives	and Mitigation							
	WFD Status	RBMP2 Ove	rall Status	Objec	tive (2021)	Objective ((2027)		
dy	and Objectives	Moderate		-			-			
r bc	Hydromorpholog	ical designati	on Heavily modified							
Water body	Water Body Mitigation Measure	No published	I mitigation meas	sures						
	WFD Protected A	reas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive		oitats ective	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive		
	YES	NO	YES	NO		YES	YES	NO		
	Scheme	Construction:	Desali	nation plan	t, abstraction	intake and di	scharge outfall			
	potentially affecting water body		Operation : New abstraction of brackish water from Medway Estuary and discharge brine to the Medway Estuary - 10-20Ml/d DO							
	WFD element	RBMP2 (2015) status	Assessed stat	atus (construction and operation)						
	· Fish	Not assessed	Not assessed	Construction of the abstraction intake and discharge outfall will be managed by good practice construction methods and						
	 Invertebrates 	High	Uncertain	assessed as low.						
	 Macroalgae 	Good	Uncertain					will not cause		
	 Phytoplankton 	High	Uncertain	deterioration of the water body.						
	Phytoplankton			Fish could be entrained in the proposed abstraction intake I this would be mitigated with appropriate screening of intake structure in accordance with best practice guidance a regulatory requirements. There is a potential risk of impact on estuarine biologicommunities as a result of the new hypersaline discharge the Medway estuary. Modelling from schemes elsewhere						
(scoping)	· Angiosperms	Not assessed	Not assessed	to bio due to tidal I There deteri mode invest impact prior tof a d	tentially be limited scharge, however, t is uncertain how gree of exposure. the likelihood of sses. Dispersion all be required to logical status. The dilution of the brine with the installation					
neu	Chemical	Good	Good			erioration in ch	nemical statu	is is assessed as		
WFD assessment (scoping)	(Overall) Protected Area D	etails	negligible. Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected.							



	Bathing water: The nearest bathing water to the proposed discharge is at Sheerness, approximately 3km distant, and is unlikely to be impacted by the scheme operation.
	Shellfish Waters: Southend and Sheppey shellfish Waters are both approximately 1.5 - 2km from the proposed discharge point. They are likely to fall well outside of the area of briny water at 10% above ambient salinity and would be expected to be unaffected by the discharge.
	SPA, SAC and RAMSAR: The HRA has identified no potential LSEs on the Medway Estuary and Marshes.
Does the component comply v	vith WFD Objective
1. No deterioration between status classes	Uncertain; there is a potential risk of deterioration between status classes; further assessment is required.
2. No impediments to GES/GEP	Yes; no impediments to GEP.
3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no impact on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.

1.25 Desalination plant at Sholling (DES_Shl10, DES_Shl20, DES_Shl50and DES_Shl100)

	WFD water body	/ name	SOUTHAMPT	ON WATER						
	WFD water body	type	Transitional W	Transitional Water						
	WFD catchment	management	South East Ira()				WFD water body ID		GB520704202800	
	River Basin Dist	rict	South East							
	WFD Designatio	ns, Objectives	and Mitigation	1						
	WFD Status	RBMP2 Overa	III Status	Objective (20	21)		Objec	tive (2	2027)	
ybc	and Objectives	Moderate		-			1			
ğ	Hydromorpholo	gical designati	on	Heavily modific	ed					
Water body	Water Body Mitigation Measure	No published r	mitigation meas	sures						
	WFD Protected Areas									
	Bathing Water Directive	Drinking Water Directive	Conservati on of Wild Birds Directive	Habitats Directive	Nitrate Direct		Shellf Direct		Urban Waste Water Treatment Directive	
	NO	NO	YES	YES	YES		YES		YES	
coping)	Scheme potentially affe	components ecting water	Construction: New abstraction intake and discharge outfall Operation: New abstraction of between and discharge to Southampton							
WFD assessment (scoping)	WFD element	RBMP2 (2015) status	Assessed s	tatus (construc	ction an	d opera	ation)			
ses	· Fish	Good	Uncertain							
ass	 Invertebrates 	Good	Uncertain	Construction of the abstraction intake and discharge o					discharge outfall	
FD	 Macroalgae 	Good	Uncertain						on methods and	
	 Phytoplankton 	High	Uncertain							



			Temporary effects due to construction will not cause				
			deterioration of the water body.				
			Fish could be entrained in the proposed abstraction intake but this would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and regulatory requirements.				
· Angiosperms	Good	Good	There is a potential risk of deterioration in status class for ecology elements as a result of the new abstraction from Southampton Water. Depending on the final option variant to be implemented. Abstraction and discharge points are located in part of the tidal water body that is approximately 2km wide. The severity of impact relating to the proposed different abstraction volumes may relate to states of tide and volumes of water in Southampton Water and further investigation is needed to understand potential ecological impact, for example on fish movements and on benthic invertebrates, in more detail.				
			The potential risk of impact on the aquatic ecology in Southampton Water due to the new discharge of briny waters is likely to be greatest nearest to the proposed discharge. Near field modelling indicates that at a maximum discharge rate of 200Ml/d, equilibrium with surrounding water (10% above ambient salinity) would be reached at 11.04m from the outfall pipe. The impacts are expected to be largely proportional to the discharge volumes and will ultimately depend on the option variant that will be implemented. Previous far field modelling for a different site in Southampton Water suggests that residence times for hypersaline waters in Southampton Water may be greater than in a more exposed, coastal water body.				
Chemical (Overall)	Fail	Fail	The risk of deterioration of chemical status is assessed as negligible and the water body already fails to achieve good chemical status.				
Protected Area Det	tails	nitrate vulnera a nutrient sen However, the and no signifi Shellfish Wat the WFD wate SPA, SAC an Solent Maritin	itive areas: The water body is associated with a surface water able zone under the Nitrates Directive. (Southampton Water) is sitive area under the Urban Waste Water Treatment Directive. scheme will not affect the management of the protected area cant changes in water quality are expected. ers: Southampton Water designated shellfish water lies within er body. There is potential for impact due to the abstraction. d RAMSAR: The HRA has identified no potential LSEs on the ne SAC. However, the HRA identified the potential for LSEs on the SAC and the Solent & Southampton Water SPA see the				
			ng report for further information.				
Does the compone							
 No deterioration classes 	n between		tain; there is a potential risk of deterioration between status es; further assessment required.				
2. No impediments to GES/GEP			no impediments to achieving GEP.				
3. No compromises to water body objectives		body Yes; r	no compromises to water body objectives.				
4. No effects on other water bodies		· ·	Yes; no impact on other water bodies.				
Assists attainmed objectives	ent of water	body No; c	No; does not assist with the attainment of water body objectives.				
6. Assists attainment objectives	nt of protected		No; does not assist with the attainment of a protected area objectives.				



1.26 River Medway Desalination, up as far as Allington Lock (DES_Med10 and DES_Med20)

	WED water body n	ame	MEDWAY							1		
	WFD water body no		Transitional	l Wat	er							
	WFD management	•	Thames Tra		- .			D water	GF	GB530604002300		
	River Basin Distric		Thames	body ID								
	WFD Designations	, Objectives a	nd Mitigation									
	WFD Status and	RBMP2 Ove	erall Status Objective (2021)					Objective	e (20	027)		
þ	Objectives	Moderate		-	•			-	•	•		
9	Hydromorphologic	al designatio	n	Heavily modified								
Water body	Water Body Mitigation Measure		I mitigation m	mitigation measures								
	WFD Protected Are	eas										
	Bathing Water Directive	Drinking Water Directive	Conservati of Wild Bi Directive		Habitats Directive	Nitrates Directive	•	Shellfish Directive		Urban Waste Water Treatment Directive		
	YES	NO	YES		NO	YES		YES		NO		
		components	Constructi	on: N	lew abstraction	n intake ar	nd dis	scharge ou	utfall	I		
	potentially affect body			Operation: New abstraction and discharge of briny waters - 10 to 20Ml/d								
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)									
	· Fish	Not	Not							by good practice		
	 Invertebrates 	assessed High	assessed construction methods and any temporary risks to the war uncertain are assessed as low. Temporary effects due to construction									
	Macroalgae	Good	Uncertain not cause deterioration of the water body.									
	Phytoplankton	High	Uncertain	Fich	could be entra	ained in the	nro	nosed abs	trac	tion intake but this		
WFD assessment (scoping)	 Angiosperms Not assessed 		Not assessed	would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and regulatory requirements. There is a potential risk of impact on the aquatic ecology of the tidal Medway as a result of the new abstraction and discharge. This abstraction may result in a reduction in freshwater flow within the tidal river with potential adverse impacts on the aquatic and inter-tidal ecology, including the macroalgal and invertebrate community. The potential risk from the scheme is exacerbated by the narrow shape of the tidal Medway, which may emphasize changes in						ing of the intake e guidance and attic ecology of the on and discharge. Shwater flow within the aquatic and and invertebrate atted by the narrow easize changes in		
				volume and impede the effective dispersal of briny waters. Mixing with Medway WwTW final effluent is likely to assist with dispersal of the hypersaline discharge, but this may contribute to thermal pollution from other discharges in the water body. It is uncertain whether there is a potential for between class deterioration, particularly as the biological elements in question are currently at Good or High status. Further investigation is needed in order to better understand the potential impacts.								
	Chemical	Good	Good	The	risk of deter					is assessed as		
	(Overall) Protected Area De		Nutrient se	nsitiv						h a surface water er, the scheme will		



		the management of the protected area and no significant changes puality are expected.					
	Bathing Waters & Shellfish Waters: There is likely to be no ron bathing waters or shellfish waters.						
SPA: The HRA identified no potential for LSEs on Medway Estuary & Mars SPA.							
Does the component comply with	WFD Ob	jective					
1. No deterioration between status of	classes	Uncertain; there is a potential risk of deterioration between status					
2. No impediments to GES/GEP		classes and further investigation is required.					
3. No compromises to water body of	bjectives	Yes; no compromises to water body objectives.					
4. No effects on other water bodies		Yes; no impact on other water bodies.					
5. Assists attainment of water body objectives		No; does not assist with the attainment of water body objectives.					
6. Assists attainment of protecte objectives	ed area	No; does not assist with the attainment of protected area objectives.					

1.27 River Stour Desalination (DES_Sto10 and DES Sto20): Stour (Kent)

		otour (itom)									
	WFD water body			STOUR (KI	<u>EN</u> T)					
	WFD water body	type		Transitiona	l Wa	ater					
	WFD managemen	nt catcl	hment	South East	Tra	iC	WFD water body	GB5207040	GB520704004700		
	River Basin Distr	ict		South East							
	WFD Designation	ıs, Obj	ectives a	and Mitigatio	n						
	WFD Status	RBMI	P2 Overa	all Status	(Objective (20)21)	Objective (2	2027)		
þ	and Objectives			-			Moderate				
oq	Hydromorpholog	ical de	signatio	on	H	avily modifie	d				
Water body	Water Body Mitigation Measure	No pu	ıblished ı	mitigation me	asuı	res					
	WFD Protected	d Areas	S								
	Bathing Water Water				of Wild Birds Direct		abitats Nitrates irective Directive		Urban Waste Water Treatment Directive		
	NO	YES		YES		YES	YES	NO	YES		
	Scheme compo potentially affe water body	nents ecting			uction: Desalination plant and new abstraction intake on: New abstraction from tidal River Stour – 10-20Ml/d output						
WFD assessment (scoping)	WFD element	RBMI (2015 status	5)	Assessed		·	ction and operati	•			
ssme	· Fish	Not asses	sed	Not assessed	pra	actice constru	the abstraction ir uction methods a	nd any tempo	rary risks to the		
asse	 Invertebrates 	Not asses	sed	Not assessed			e assessed as lo I not cause deterio				
G	 Macroalgae 	High		High							
>	 Phytoplankton 	Poor		Poor	would be mitigated with appropriate screening of the intake structure in accordance with best practice guidance and						
	· Angiosperms	Not asses	ssed	Not assessed							



			There is the potential for impact on elements of the aquatic ecology of the tidal River Stour as a result of the new abstraction, although some elements including invertebrates are not currently classified.				
			The abstraction is proposed to take place near to the mouth of the tidal river approximately 1km from the coast. This may reduce the freshwater input to the estuary for part of the tidal cycle leading to possible impacts on inter or subtidal macroalgae and on other, transitional groups. However, these impacts are considered to be minor. Macroalgae are adapted to tidal processes such as exposure at low tide and fluctuations in salinity levels. In addition, a reduction in freshwater input may result in a coincident reduction in nutrient loading from inland sources which could benefit phytoplankton communities in the estuary. Major adverse impact is thought to be unlikely on these two botanical elements at what appear to be relatively low abstraction volumes. Furthermore, phytoplankton are currently classified as Poor status and further deterioration is thought unlikely. Additional flow data regarding the volume and quality of water and the freshwater component discharging to the estuary is required but the most likely impact on macroalgae and phytoplankton is within class change.				
Chemical (Overall)	Good	Good	The risk of deterioration of chemical status is assessed as negligible.				
Protected Area D	etails	Thanet Coasee the HR	SPA, SAC and RAMSAR: The HRA identified the potential for LSEs on the Thanet Coast SAC and the Thanet Coast & Sandwich Bay SPA & RAMSAR, see the HRA screening report for further information. Drinking water protected area: the water body (Stour Kent) is a Drinking Water				
		Protected Area but there is no risk of adversely affecting the chemical status at the water body scale.					
		nitrate vuln sensitive a the schem significant	Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. (Stour Kent) is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected.				
Does the compor	nent comply wit						
1. No deterioration classes	n between status	Yes; no d	deterioration between status classes				
	2. No impediments to GES/GEP		mpediments to GEP.				
3. No compromise objectives		Yes; no c	Yes; no compromises to water body objectives.				
4. No effects on other water bodies			Yes; no impact on other water bodies.				
5. Assists attainment objectives		No, does	No; does not assist with the attainment of water body objectives.				
6. Assists attainm area objectives	ent of protected	No; does	No; does not assist with the attainment of protected area objectives.				



1.28 River Stour Desalination (DES_Sto10 and DES Sto20): Kent North

	WED	du nomo	1/ a in 4 h 1 = ii 4 li								
	WFD water box	•	Kent North								
	WFD water boo	•	Coastal Wate	_		WFD v	water				
		nent catchment	body ID					GB650704510000			
	River Basin Di	strict	South East								
	WFD Designat	ions, Objectives a	nd Mitigation								
	WFD Status	RBMP2 Overall S	itatus	Objective (2	021)		Obje	ctive (2	2027)		
ody	and Objectives	Moderate		-			-				
r bd	Hydromorphol	ogical designation	1	Heavily modi	fied						
Water body	Water Body Mitigation Measure	No published mition	gation measure	ation measures							
	WFD Protected	l Areas									
	Bathing Water Directive	Drinking Water Directive	Conservat ion of Wild Birds Directive	Habitats Directive	Nitrate Direct		Shellfi Direct		Urban Waste Water Treatment Directive		
	YES	NO	YES	YES	NO		YES		NO		
	Scheme components potentially affecting water body		Operation:				th coas	stal wate	ers - 10-20Ml/d		
	RBMP2		assumed output								
	WFD element	(2015) status	Assessed status (construction and operation)								
	· Fish	Not assessed	Not assessed								
	 Invertebrates 		Good	to the water body are assessed as low. Temporary effects							
	· Macroalgae	Not assessed	Not assessed	due to construction will not cause deterioration of the water body.							
	 Phytoplankto 	Not	Not assessed	The new discharge may impact salinity in the vicinity of the							
WFD assessment (scoping)	· Angiosperms	Not	Not assessed	outfall and therefore, may affect the localised distribution of invertebrate communities but this is unlikely to have a major effect on fauna across the wider WB. Salinity levels of more than 10% above ambient and therefore more than the EC threshold for salinity discharges to shellfish waters are most likely to be encountered for only a few metres from the discharge. The extent of impact in this area will be dependent upon factors including discharge salinity, tidal hydrodynamics and rates of dispersal. In addition, the impact of brine water discharge on the coastal waters will be mitigated by the assumed mixing with treated Weatherless WwTW effluent. Therefore, any risks of deterioration to the coastal water body are negligible.					o have a major relevels of more re than the EC vaters are most etres from the area will be e salinity, tidal addition, the all waters will be ed Weatherless erioration to the		
	Chemical (Overall)	Good	Good	The risk of done negligible.	leteriora	tion of ch	emical	status i	is assessed as		
	Protected Area Details		SPA, SAC and RAMSAR: The HRA identified the potential for LSEs on the Thanet Coast SAC and the Thanet Coast & Sandwich Bay SPA & RAMSAR, see the HRA screening report for further information. Shellfish Waters: The discharge point is located on the edge of the Stour Estuary designated Shellfish Water. Modelling for other schemes indicates that, for a distance of a few metres from the discharge pipe salinity levels could exceed 10% above ambient. Should this area overlap with the edge of the shellfish water, it would likely represent a fraction of 1% of the designated fishery, but impacts on shellfish are possible within this zone.								



ass ser Ho	Nutrient sensitive areas: The upstream Stour Kent water body is associated with a surface water nitrate vulnerable zone. It is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect, the management of the protected area and no significant changes in water quality are expected.					
Does the component comply with WFD Objective						
1. No deterioration between status classes	Yes; no deterioration between status classes					
2. No impediments to GES/GEP	Yes; no impediments to GEP.					
3. No compromises to water body objectives	Yes; no compromises to water body objectives.					
4. No effects on other water bodies	Yes; no impact on other water bodies.					
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.					
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.					

1.29 River Thames Desalination adjacent to Swanscombe WwTW (DES_Swa10 and DES_Swa20)

	WFD water bo	odv name	THAMES MID	DLE						
	WFD water bo			Transitional Water						
	WFD catchment	management	Thames TraC				water D	GB530603911402		
	River Basin D	istrict	Thames	Thames						
	WFD Designa	tions, Objectiv	es and Mitigati	and Mitigation						
	WFD Status	RBMP2 Overa	all Status	Objective (2	021)		Object	tive (2	027)	
ody	and Objectives	Moderate		-			-			
r b	Hydromorpho	logical design	ation	Heavily modi	fied					
Water body	Water Body Mitigation Measure	No published	mitigation meas	itigation measures						
	WFD Protecte	d Areas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	Habitate	Nitrates Directive		Shellfish Directive		Urban Waste Water Treatment Directive	
	NO	NO	YES	NO	YES		NO		YES	
	Scheme potentially af body	components fecting water	Construction: New abstraction intake and discharge outfall Operation: New abstraction from Thames Estuary and subsequent discharge of briny waters to the same water body - 20Ml/d assumed output							
WFD assessment (scoping)	WFD element	RBMP2 (2015) status	-	Assessed status (construction and operation)						
ıt (s	 Fish 	Good							anaged by good	
nen	 Invertebrate 		Uncertain	practice constru water body are						
ssn	 Macroalgae 		_ Cricortain	construction will						
sses	 Phytoplankt 	on High							-	
WFD as	· Angiosperm	Moderate	Fish could be entrained in the proposed abstrathis would be mitigated with appropriate screen structure in accordance with best practice regulatory requirements.					ing of the intake		
				There is a pote communities as					arine biological and subsequent	



			and				
Chemical (Overall)	Good	Good	The risk of deterioration in chemical status is assessed a negligible.				
Protected Area De	tails	nitrate nutrier Howev and no SPA, S Thame	nerable zone und ensitive area und the scheme will gnificant changes C and RAMSAR:	ne water body is associated with a surface water er the Nitrates Directive. (THAMES MIDDLE) is a er the Urban Waste Water Treatment Directive. not affect the management of the protected area in water quality are expected. The HRA identified the potential for LSEs on the SPA & RAMSAR, see the HRA screening report			
Does the compone	ent comply	with W	Objective				
No deterioration classes	n between :	status		a potential risk of deterioration between status essment required.			
2. No impediments	to GES/GEF)	es; no impedimen	s to achieving GEP.			
3. No compromise objectives	es to water	body	es; no compromis	es to water body objectives.			
4. No effects on oth	er water boo	dies	es; no impact on o	other water bodies.			
5. Assists attainme objectives			No; does not assist with the attainment of water body objectives.				
6. Assists attainm	ent of prot	ected	No; does not assist with the attainment of protected area objectives.				

1.30 Desalination Thanet (DES_Tha10 and DES_Tha20)

	WFD water body	/ name	Kent North	Kent North						
	WFD water body	y type	Coastal Wate	er						
	WFD manageme	ent catchment	South East T	South East TraC			water D	GB650704510000		
	River Basin Dist	rict	South East							
	WFD Designation	ns, Objectives	and Mitigation							
	WFD Status	RBMP2 Overa	II Status	Objective (20	21)		Object	tive (20	027)	
ybc	and Objectives	Moderate		-			1			
r be	Hydromorpholo	gical designation	on	Heavily modified						
Water body	Water Body Mitigation Measure	No published m	nitigation measu	ıres						
	WFD Protected	Areas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Nitrates Directive Directiv			Shellfish Directive		Urban Waste Water Treatment Directive	
	YES	NO	YES	YES	NO		YES		NO	
WF			Construction	n: New abstract	ion int	ake and	dischar	ge outf	fall	



Scheme compone potentially affecti body		Operation: I waters - 10-2	New abstraction and discharge within Kent North coastal 20Ml/d DO			
WFD element	RBMP2 (2015) status		atus (construction and operation)			
· Fish	Not assessed	Not assessed	Construction of the intake and outfall will be managed by good practice construction methods and any temporary			
 Invertebrates 	Good	Good	risks to the water body are assessed as low. Temporary			
· Macroalgae	Not assessed	Not assessed	effects due to construction will not cause deterioration of the water body.			
· Phytoplankton	Not assessed	Not assessed	Fish could be entrained in the proposed abstraction intake but this would be mitigated with appropriate screening of			
· Angiosperms	Not assessed	Not assessed	the intake structure in accordance with best practice guidance and regulatory requirements There is a negligible risk of deterioration to the coastal water body as a result of the new abstraction. However, the new discharge may impact salinity in the vicinity of the outfall and therefore, may affect the localised distribution of invertebrate communities but this is unlikely to have a major effect on fauna across the wider WB. Salinity levels of more than 10% above ambient and therefore more than the EC threshold for salinity discharges to shellfish waters are most likely to be encountered for only a few metres from the discharge. The extent of impact in this area will be dependent upon factors including discharge salinity, tidal hydrodynamics and rates of dispersal. The latter would be expected to be relatively high in an offshore coastal location. Any slight risks will be localised and not sufficient to prompt deterioration between status classes at a water body scale.			
Chemical (Overall)	Good	Good	The risk of deterioration in chemical status is assessed as negligible.			
Protected Area De		designated S a distance of exceed 10% 1% of the de this zone. Bathing Wate Kent coastlin The use of a impact on the SPA and SAC coast SAC screening reg	Interest The discharge point is located within the Margate hellfish Water. Modelling for other schemes indicates that, for a few metres from the discharge pipe salinity levels could above ambient. This area would likely represent a fraction of signated fishery, but impacts on shellfish are possible within ers: A number of Bathing Waters are situated on the North re (including Minnis Bay Birchington, West Bay Westgate). It long sea outfall would most likely result in no noticeable see waters. C: The HRA has identified the potential for LSEs on the Thanet and the Outer Thames Estuary SPA, see HRA stage 1 port for further information.			
Does the compon						
 No deterioration classes 		,	deterioration between status classes is expected			
 No impediments No compromis 		ody	Yes; no impediments to GEP.			
objectives		res, no	Yes; no compromises to water body objectives.			
 No effects on other Assists attainment 		ody	impact on other water bodies.			
objectives		No; doe	No; does not assist with the attainment of water body objectives.			
6. Assists attainme objectives	nt of protected a	rea No; does	No; does not assist with the attainment of protected area objectives.			



1.31 Desalination Western Yar (DES_Yar10 and DES_Yar20)

				II (DES_18	ai io aii	<u> </u>	1 di 20)					
	WFD water body		Solent									
	WFD management		Coastal Water		WFD wa	10 1						
	WFD manageme catchment	nt	South East Tra	aC	body ID	GB65	0705150000					
	River Basin Dist	rict	South East									
			WFD Designati	ions, Objectives a								
	WFD Status and	RBMP2 O	verall Status	Objective (2021)	Object	tive (2027)					
	Objectives	Mo	derate	-			-					
ody	Hydromorpholog	gical designat	ion	Heavily modified								
Water body	Water Body Mitigation Measure	No published	mitigation meas	sures								
			WF	D Protected Areas	3		_					
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	ds Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive					
	YES	NO	YES	YES	YES	YES	YES					
	Scheme compor		Construction	Construction: New abstraction intake and discharge outfall								
	potentially affection	ting water		Operation: New abstraction and discharge within the Solent (10-20Ml/d DO output)								
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)									
	· Fish	Not assessed	Not assessed	nts of the aquatic le of briny waters.								
	 Invertebrates 	Good	Good	The proposed net the northeast of the								
	 Macroalgae 	Not assessed	Not assessed	within the Solent.								
g)	· Phytoplankton	Not assessed	Not assessed	undertaken. Modelling of other	ar hypar-sali	ne discharges	for desalination					
WFD assessment (scoping)	 Angiosperms 	Not assessed	Not assessed	plants of up to 200	OMI/d has indicated that the variety of the 10% of a rea. This is Solent Coase or raised salinic than the EC is. Further invenic effect of and WFD statuge may impagalised distribu	cated good disvorst-case scellabove ambies is less than stal WB (25,958 ty levels of <10 threshold for svestigation worstigation worstigation worstigation worstigation worstigation of inverteb	persion within the nario would be for nt in an area of 0.0001% of the sha). A wider area 10% above ambient ralinity discharges all be needed to salinity levels over lly and therefore, orate communities					
				wider WB. Any slig according to the discharge rates considered unlike Western Yar woul Fish could be ent this would be mitig structure in accoregulatory require	ght risk would volume of resulting in all the last a hydrause a WF rained in the gated with apportance with	generally be e brine dischar lower risk. persaline plur D status deter proposed abst propriate scree	xpected to reduce rged, with lower Therefore, it is me originating at rioration. raction intake but ening of the intake					



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Chemical (Overall)	Fail	Fail	The risk of deterioration of chemical status is assessed as negligible and the water body already fails to achieve good chemical status.			
	(> aı	/ater. Howeve 5km) from th	s: The water body is associated with the Colwell Bay Bathing er, these bathing waters are situated at a considerable distance be point of discharge and therefore, the operation of the scheme atted construction activities are not expected to have any adverse			
Protected Area Details		itrate vulnera ensitive area cheme will no	tive areas: The water body is associated with a surface water ble zone under the Nitrates Directive. The Solent is a nutrient under the Urban Waste Water Treatment Directive However, the of affect the management of the protected area and no significant ter quality are expected.			
	S vo w su	Shellfish Waters: The scheme operates within the Yarmouth designated Shellfish Water. Modelling for other hypersaline discharges of similar output volume in The Solent indicate that salinity levels up to 7.58m from the outlet would exceed 10% above ambient. This is estimated to be <0.002% of the surface area of the Yarmouth Shellfish Waters and therefore the overall impact would be negligible.				
		SPA and SAC: The HRA has identified no potential LSEs on the Solent Maritime SAC or the Solent & Southampton Water SPA.				
Does the compon	ent comply wit	h WFD Obje	ctive			
No deterioration classes	between status		eterioration between classes is anticipated, however modelling is or the scheme.			
2. No impediments		Yes; no im	pediments to achieving Good Ecological Potential			
3. No compromises objectives		Yes; no co	empromises to water body objectives.			
4. No effects on oth bodies	4. No effects on other water bodies		Yes; no impact on other water bodies.			
5. Assists attainme body objectives	5. Assists attainment of water body objectives		No; does not assist with the attainment of water body objectives.			
6. Assists attainme area objectives	nt of protected	No; does r	No; does not assist with the attainment of protected area objectives.			

1.32 Sandown Coastal Desalination IOW (DES_San 20 and DES_San200)

	WFD water body	name	Isle of Wigh	Isle of Wight East					
	WFD water body	type	Coastal Wa	ater					
	WFD n catchment	South East		TraC	WFD water body ID	GB650705530000			
	River Basin District		South East						
	WFD Designation	and Mitigat	tion						
	WFD Status	RBMP2 Ove	rall Status	Objective (2	2021)	Objective (2027)			
body	and Objectives		-		-				
pc .	Hydromorpholog	ical designati	ion	Heavily mod	ified				
Water	Water Body Mitigation Measure	Flood protection use Flood protection use Flood protection use Coast protection use Coast protection use Coast protection use Flood protection use Flood protection use Flood protection use Coast protection use Coast protection use Coast protection use		27. Dredge 28.Manage 26.Sedimen 27. Dredge 28.Manage 2.Remove of 7.Bank reha	It management disposal site selection disturbance bbsolete structure ibilitation bbsolete structure				
	WFD Protected A	reas							



	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive			
	YES	NO	YES	YES						
	Scheme	components	Construction:	Desalination plan	nt, intake and o	outfall				
		cting water	Operation: New abstraction from coastal waters and discharge of brine to							
	body		the coastal waters of the Isle of Wight – 9 to 200Ml/d DO							
	WFD element	RBMP2 (2015) status	Assessed state	tus (construction	and operation	on)				
	· Fish	Not assessed	assessed	Construction of the practice construct	ion methods a	and any tempo	orary risks to the			
	 Invertebrates 	Good		water body are a						
	 Macroalgae 	Not assessed	Not assessed	construction will n	ot cause deter	ioration of the	water body.			
	Dhydanlanktan	Not	Not	ish could be enti						
	 Phytoplankton 	assessed		his would be mition that the contracture in accordance in accordance in the contracture i						
				egulatory require		best practice	guidance and			
		t N	The hyper-saline or reatment works (vill be constructed notably chalk reemydro-morphologic	WTW) long se d to avoid any f located some cal changes at	a outfall disch WFD higher s 2km away). T a habitat scal	arge. The intake sensitivity habitat here is no risk of e.				
WFD assessment (scoping)	· Angiosperms	Not assessed	Not assessed to the term of th	Near field modelling equilibrium with sealinity and there discharges to she the outfall pipe. The model at this dischart mid water comodelled). It is especially be subject to saling than 0.0001% of the area would be subjected to determine the evels over time of the water but these features of the water characteristics.	urrounding wa fore less than Ilfish waters) volume, harge volume, nditions (the timated that a hity levels of 10 he surface area bject to raised efore less than ellfish waters. ine the chronion in ecology and to have a high e impacts are	ter (up to 10% the EC thres would be reach aximum distance corresponding option for 20% above ambased of the WB (26% salinity levels the EC thres Further investic effect of sligh WFD status. The localised in unlikely to extend the EC thres the EC thres were seffect of sligh WFD status.	above ambient shold for salinity ned at 8.7m from the yielded by the growth spring tide 200Ml/d was not of 0.025ha could bient. This is less 5,369ha). A wider of <10% above shold for salinity igation would be the training the hyper-saline mpact on benthic tend to sensitive			
				For option variants of 20Ml/d or less the risk of deterioration in ecological status appears negligible. There remains some uncertainty as to the impact of the hyper-saline/sewage effluent discharge, for the higher volume rate option of 200Ml/d. which would be expected to raise salinity levels over a wider area, although this is still likely to represent a minimal fraction of the total WFD WB area.						
	Chemical (Overall)	Good	(HOOG	The risk of deter negligible.	oration of ch	emical status	is assessed as			
	Protected Area Details		SAC: The HRA has identified no potential LSEs on the South Wight Maritime SAC. Bathing Waters: There are two bathing waters located near Sandown, including Sandown and Yaverland. The discharge outfall will be a significant distance from the shore and will not impact upon bathing water quality. Construction of the intake is also not considered to lead to any adverse effects on bathing water quality assuming best practice construction methods are							
			applied.	-						



	Shellfish Waters: The water body is associated with the Chichester Harbour Shellfish waters. However, these shellfish waters are a significant distance from Sandown Bay and therefore there will be no impact.
	Nutrient sensitive areas (Nitrate vulnerable zones): The coastal water body is associated with a nutrient sensitive area; however, the scheme will not affect nitrate concentrations or the management of this protected area.
Does the component comply v	vith WFD Objective
No deterioration between status classes	Yes; no deterioration between status classes, however, modelling data for a 200Ml/d option would improve certainty.
2. No impediments to GES/GEP	Yes; no impediments to GEP.
3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no effects on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.

1.33 Sandwich WTW Indirect Potable Water Reuse(PWR_Plu10)

1.0	Juliaw		W IIIdii ec		Otable i	va t	CI IX	cusc	('' '		14 10 <i>)</i>
	WFD water boo	dy name	STOUR (KENT)								
	WFD water boo	dy type	Transitional Wat	Transitional Water							
	WFD managen catchment	nent	South Fact Ira(:				WFD water body ID		GB5	GB520704004700	
	River Basin Di	strict	South East								
	WFD Designat	ions, Object	ives and Mitigation	es and Mitigation							
	WFD Status a	nd RBMP	Overall Status	-	Objective (2021	1)		Object	ive (2	2027)	
	Objectives	Poor			-			Modera	ate		
od)	Hydromorphol	ogical desig	nation	He	eavily modified						
Water body	Water Body Mitigation Measure	No pub	lished mitigation n	nea	sures						
	WFD Protected	d Areas									
	Bathing Water Directive	Conservation of Wild Bir Directive		Habitats Directive	Nitra Direc		Shellfis Directi		Urban Water Treatmen Directive	-	
	NO	YES	YES		YES	YES		NO		YES	
g)	Scheme potentially aff	components ecting wate	Construction: New discharge outfall								
oin	body				ostream on the S		emuem	iioiii Sai	iuwic	,	.o a new
assessment (scoping)	WFD element	(2015) status	2		us (constructio		l operati	on)			
ssme	· Fish	Not assess	Not assessed		onstruction of the						
asse	· Invertebrates	Not assess	Not assessed	is	low. Temporary	effect	s due to				
WFD	· Macroalgae High		High	deterioration of the water body. The discharge will be treated to tertiary standards for ammor phosphate and BOD. Therefore, there will be negligible risk							



				impacting the physico-chemical quality elements of this water body.		
· Phytoplankton	ms Not No		or	The ecology in the Stour transitional water body is largely unassessed, with macroalgae and phytoplankton being the only two biological supporting elements currently monitored. The discharge would take place approximately 25 km upstream of the		
· Angiosperms			t sessed	coast and be located approximately 4.5 km upstream of the abstraction point. Given the small proportion of this modified water body that will be subject to increased flows and the natural of the biological elements under consideration, it is considered unlikely that ecological status will deteriorate as a consequence of effluent inputs from Sandwich WwTW.		
Chemical (Overall)	Good Go			The discharge will be tertiary treated and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as low.		
	Protected Area Details Protected Area Details Protected Area Details Nutrie vulner sensit schem chang the EA SPA a		cted Area ater body nking wa ent sensitive area me will no ges in wa A dischaland SAC A, Thane	reprotected area: the water body (Great Stour) is a Drinking Water a but there is no risk of adversely affecting the chemical status at a scale. Furthermore, Southern Water will want to ensure no risks to ter supplies. In a surface water nitrate and the under the Nitrates Directive. Great Stour River is a nutrient under the Urban Waste Water Treatment Directive. However, the of affect the management of the protected area and no significant ter quality are expected; the discharge would be permitted through the representation of the protected area and the surface water nitrate and the under the Urban Waste Water Treatment Directive. However, the permitted the management of the protected area and no significant ter quality are expected; the discharge would be permitted through the permitted through the under the Urban Waste Water Treatment Directive. The HRA has identified no potential LSEs on the Stodmarsh SAC to Coast SAC, or the Thanet Coast & Sandwich Bay SPA.		
Does the compone			WFD Ob	ective		
 No deterioration classes 			,	deterioration between status classes.		
2. No impediments			Yes; no	impediments to GEP.		
3. No compromise objectives				compromises to water body objectives.		
4. No effects on oth			Yes; no	effects on other water bodies.		
objectives		No; do	es not assist with the attainment of water body objectives.			
6. Assists attainment area objectives	ent of prot	ected	No; do	es not assist with the attainment of protected area objectives.		

1.34 Sandwich WTW Indirect Potable Water Reuse(PWR_Plu16)

	WFD water body n	ame	STOUR (KENT)						
	WFD water body ty	/ре	Transitional Wa	Transitional Water					
	WFD manag	gement	South East TraC			WFD water body ID		GB520704004700	
	River Basin Distric	:t	South East						
^	WFD Designations	, Objecti	ves and Mitigati	on					
body	WFD Status and	Overall Status Objective (2021)			Objective (2027)				
ı b	Objectives	Poor			- Mode		Modera	rate	
Water	Hydromorphologic	al desig	nation	He	avily modified				
X	Water Body Mitigation Measure	•	lished mitigation measures						
	WFD Protected Are	eas							



	Bathing Water Directive	Drinking Water Directive		servation Vild Birds stive	Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive			
	NO	YES	YES		YES	YES	NO	YES			
	Scheme potentially affe body	components ecting water	Oper	ation: Trans	ew discharge of fer of 16Ml/d to estream on the	treated effluent	from Sandwic	ch WwTW to a new			
	WFD element	RBMP2 (2015) status	As	sessed state	us (construct	ion and opera					
	· Fish	Not assessed	No		Construction of the discharge outfall will be managed by go practice construction methods such that any risk to the water bo						
	· Invertebrates	Not	No	it is	low. Temporar		construction a	are unlikely to cause			
	 Macroalgae 	High	Hiç	gh	o diacharga u	vill be treeted t	o tortion, oton	darda far ammania			
	 Phytoplanktor 	n Poor	Po					dards for ammonia, be nealigible risk of			
WFD assessment (scoping)	· Angiosperms	Not assessed	No d ass	im bo	phosphate and BOD. Therefore, there will be negligible risk impacting the physico-chemical quality elements of this wat body. The ecology in the Stour estuary transitional water body is large unassessed, with macroalgae and phytoplankton being the or two biological supporting elements currently monitored. The discharge would take place approximately 25 km upstream of the coast and be located approximately 4.5 km upstream of the abstraction point. Given the small proportion of this modified water body that will be subject to increased flows and the nature of the biological elements under consideration, it is considered unlikely that their ecological status will deteriorate as consequence of effluent inputs from Sandwich WwTW.						
essme	Chemical (Overall)	Good	Go	od th	The discharge will be tertiary treated and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as low.						
WFD ass	Protected Area Details Protected Area Details Protected Area Details			ing water proceed Area buater body scanking water sensitive arable zone utive area under will not arges in water of A discharge and SAC: Th	g water protected area: the water body (Great Stour) is a Drinking Water ed Area but there is no risk of adversely affecting the chemical status at er body scale. Furthermore, Southern Water will want to ensure no risks to king water supplies. It sensitive areas: The water body is associated with a surface water nitrate able zone under the Nitrates Directive. Great Stour River is a nutrient we area under the Urban Waste Water Treatment Directive. However, the ewill not affect the management of the protected area and no significant as in water quality are expected; the discharge would be permitted through discharge permit controls.						
	Does the comp	onent comply				e Thanet Coas	a Sanuwich	Day OFA.			
	No deteriora classes					ween status cla	sses.				
	2. No impedime			Yes; no imp	pediments to C	GEP.					
	3. No compron objectives					water body obje	ectives.				
	4. No effects on			Yes; no effe	Yes; no effects on other water bodies.						
	5. Assists attair objectives			No; does n	No; does not assist with the attainment of water body objectives.						
	6. Assists atta area objectives	inment of pro	tected	No; does not assist with the attainment of protected area objectives.							



1.35 Sandown WwTW Indirect Potable Reuse (PWR_SEY5)

	WFD water body		Eastern Yar (ower)			\				
	WFD water body		River	Lower)							
	WFD n	nanagement	Isle of Wight			WFD	wate	GB10	7101005971		
	catchment River Basin Distr	ict	South East								
			and Mitigation								
	WFD Status	RBMP2 Ove		Objective ((2021)			Objective	(2027)		
>p	and Objectives	Poor	raii Otatus	-	(2021)			Good	(LOZI)		
poq	Hydromorpholog	ical designati	ion	Heavily mo	dified		·				
Water body	Water Body Mitigation Measure	No published	I mitigation mea	asures							
	WFD Protected A	reas			T						
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	Habitate	Nitra Dire	ites ctive		lfish ctive	Urban Waste Water Treatment Directive		
	NO	YES	YES	YES	YES		NO		NO		
		components	Construction	: New discharg	ge outf	all					
	potentially affecting water body		Operation: N Yar River	Operation: New 5 MI/d discharge of treated effluent into the Lower Eastern							
	WFD element	RBMP2 (2015) status									
(6	· Fish	High	High	Construction of the outfall will be managed by good practic construction methods such that any risk to the water body is lo Temporary effects due to construction are unlikely to cause deterioration of the water body. The discharge will be treated to tertiary standards for ammoniphosphate and BOD, and therefore, there will be a low risk impacting the physico-chemical quality elements of this water body.							
WFD assessment (scoping)	· Macro- invertebrates	High	High	body (currently at high status). The proposed treatment will also include a process (either AOP or reverse osmosis) to remove the majority orga chemical contaminants. Therefore, there will be a low risk organic chemicals such as endocrine disruptors caus deterioration to fish status. Based on Q95 statistics at Alverstone GS, the discharge prompt an increase of 120% in low flows, which may disruptoral patterns of velocity and depth and impact upon residence.							
Poor Macrophytes & Phytobentos Poor Poor Macrophytes Braineady substantially altered and wh HMWB, it is likely that the increase hydrological regime however it in ecology. Further assessment is		biological elements such as macroinvertebrates, fish a macrophytes. In this case, where hydrological processes a already substantially altered and where the river is a designat HMWB, it is likely that the increase in low flows may benefit hydrological regime however it may be detrimental to ecology. Further assessment is required to ascertain magnitude of impact on ecological receptors.			al processes are er is a designated is may benefit the etrimental to the to ascertain the						
	Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AO would be permitted through the EA discharge permit co The risk of deterioration in chemical status is therefore ass as negligible.				e permit controls.			
	Protected Area D	etails	Drinking water protected area: the water body (Lower Eastern Yar) is a Drinking Water Protected Area but there is no risk of adversely affecting the chemical status at the								



feasible list not in WRMP19

	water body scale. Furthermore, Southern Water will want to ensure no risks to its drinking water supplies				
	Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls.				
	SPA and SAC: The HRA has identified no potential LSEs on the Solent & Isle of Wight Lagoons SAC or Solent & Southampton Water SPA.				
Does the component comply w	ith WFD Objective				
1. No deterioration between status classes	Uncertain; there is a potential risk of deterioration between classes, further				
2. No impediments to GES/GEP	investigation is required				
3. No compromises to water body objectives	Yes; no compromises to water body objectives.				
4. No effects on other water bodies	Yes; no effects on other water bodies.				
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.				
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.				

1.36 River Adur offline Reservoir (RES_Bla)

	WFD water body	name	Adur East (Sakeham)								
	WFD water body	type	River								
	WFD m catchment	anagement	Adur and Ouse	WFD body ID	water	GB10	7041012900				
	River Basin Distr	ict	South East								
	WFD Designation	s, Objective	s and Mitigation	and Mitigation							
	WFD Status	RBMP2 Ove	erall Status	Objective (2021)	Objec	tive (2	027)			
	and Objectives	Moderate		-		-					
dy	Hydromorpholog	ical designat	ion	Not designated	artificial or hea	vily mo	dified				
Water body	Water Body Mitigation Measure	No published mitigation measures									
	WFD Protected A	reas									
	Bathing Water Directive	Drinking Water Directive	Conservatio of Wild Bird Directive	Habitate	Nitrates Directive	Shelli Direc		Urban Waste Water Treatment Directive			
	NO	NO	NO	NO	YES	NO		YES			
		omponents	Construction:	New abstraction in	ntake on the A	dur					
WFD	potentially affec body	ung water	Operation: New abstraction in the East Adur to support reservoir— 30MI/d maximum assumed output								
S	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)								



feasible list not in WRMP19

· Fish	Moderate	Moderate	Construction of the intake will be managed by good practice construction methods and any temporary risks to the water body are assessed as low. Temporary effects due to construction will not cause deterioration of the water body. There is water available for abstraction all year round and the river is very discharge rich. Reduction in flow downstream of abstraction intake would be protected by the Minimum Residual			
Macro-invertebrates	High	High	Flow (MRF) to protect very low flows (0.01Ml/d at Sakeham). The proposed peak abstraction of 30Ml/d could still represent up to 37% of the flow during dry winters. Part of the Adur (East) is a designated Sensitive Area (Eutrophic), classified as Bad status for Phosphorous and, linked to this, Moderate for aquatic macrophytes. Treated sewage discharge is a stated reason for not achieving good status. It is possible that increased abstraction could serve to reduce the dilution for P rich effluent resulting in increased nutrient levels, particularly at times of low ambient flows. In addition, the fish community is failing to reach good status due to barriers and impoundments. It is believed that migratory species such as brown/sea trout are			
			affected and a further decrease in flows at certain times of year could impact upon their movements. Conditions would need to be set at appropriate levels to safeguard the aquatic environment, there should be no material adverse effects of the abstraction on the water quality or ecology, including reducing access to available habitat for salmonids, in particular during key periods for migration. Water would be abstracted from the river through fine			
Macrophytes Phytobentos	Moderate	Moderate	screens to prevent fish entrainment. The details of reservoir management measures and treatment process water discharges are currently unknown. It is assumed that they will be managed to minimise water quality issues. Overall it is unlikely that deterioration between status classes for fish, macro-invertebrates or macrophytes and phytobenthos will occur. However, given the uncertainty about the operational pattern, further assessment is required on the environmental flows			
Chemical (Overall)	Good	Good (uncertain)	and seasonality and the potential to cause a deterioration in status. There is unlikely to be a change in the chemical status as the EA abstraction licence conditions, such that the buffering capacity of the river will remain largely the same. However, given the uncertainty about the operational pattern further assessment is			
Protected Area D		vulnerable zo sensitive area scheme will n changes in wa conditions.	required on the environmental flows. tive areas: The water body is associated with a surface water nitrate one under the Nitrates Directive. River Adur East is a nutrient a under the Urban Waste Water Treatment Directive. However, the not affect the management of the protected area and no significant ater quality are expected (controlled via the EA abstraction licence			
Does the compoi						
 No deterioral status classes 	iion betweer	required.	erioration between status classes, however further assessment is			
2. No impediments		Yes; no imp	ediments to achieving GES.			
3. No compromi	ses to wate	Yes; no con	Yes; no compromises to water body objectives.			
body objectives 4. No effects or bodies		Yes; no effe	Yes; no effects on other water bodies.			
5. Assists attainn body objectives	nent of wate	No; does no	at assist with the attainment of water body objectives.			
	tainment o jectives	No; does no	ot assist with the attainment of protected area objectives.			



1.37 Tidal River Arun Desalination (DES_Aru20): Arun

1.0			ARUN	(2)	LO_AIUZU	<i>,</i> , , , , , , , , , , , , , , , , , ,	1			
	WFD water body WFD water body		Transitional Wa	ater						
		nanagement			WFD water boo	dv ope 4070	1405000			
	catchment		South East Tra	ID ID			GB540704105000			
	River Basin Distr	ict	South East							
	WFD Designation	s, Objectives	and Mitigation							
	WFD Status	RBMP2 Ove	rall Status	Objective (202	21)	Objective	(2027)			
<u>></u>	and Objectives Hydromorpholog	Moderate	on	- Heavily modifie	2d	Good				
Water body	Water Body Mitigation Measure	iter Body igation No published		mitigation measures						
	WFD Protected A	reas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Bird Directive	ds Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive			
	NO	YES	YES	YES	NO	NO	NO			
	Scheme components		Construction:	Desalination pla	ant and new abstra	action intake				
	potentially affecting water body		Operation: New abstraction from tidal River Arun – 20 Ml/d assumed output							
	WFD element	RBMP2 (2015) status	Assessed sta	atus (construction and operation						
	· Fish	Not assessed	Not assessed	Construction of the abstraction intake will be managed by good practice construction methods and any temporary risks to the water body are assessed as low. Temporary effects due construction will not cause deterioration of the water body. Fix could be entrained in the proposed abstraction intake but the would be mitigated with appropriate screening of the intakes structure in accordance with best practice guidance are regulatory requirements.						
nt (scoping)	· Invertebrates	Not assessed	Not assessed							
	· Macroalgae	High	High	the tidal River quality in the ti returns from va- impact on the	r risk of adverse in r Arun due to the dal Arun is already arious WwTWs. Th e river's capacity	e new abstrace heavily influence e abstraction of to buffer in	ction. The water enced by effluent may have a local norganic inputs.			
WFD assessmer	· Phytoplankton	Not assessed	Not assessed	The reduction invertebrates, for between class	is deemed insuffici ganic nitrogen (DIN n in flows is li which are not cur ass deterioration ir	l) status. kely to imparently assessed macroalgae i	act most upon ed. The potential s expected to be			
	· Angiosperms	Not assessed	Not assessed	minimal. The macroalgal community in this transitional vibody will be adapted to a cycle of exposure and submer Timing the abstraction to avoid low tides would further mit any possibility of impact.						
	Chemical (Overall)	Good	Good	The risk of deterioration of chemical status is assessed as						
	Protected Area D	etails		negligible. water protected area: the water body (Arun) is a Drinking d Area but there is no risk of adversely affecting the chemical str body scale.						



	SAC and SPA: The HRA has identified no potential for LSEs on the Arun Valley SAC or SPA.
Does the component comply v	vith WFD Objective
1. No deterioration between status classes	Yes; no deterioration between classes, further assessment is needed (e.g. timing abstraction)
2. No impediments to GES/GEP	Yes; no impediment to achieving GEP
3. No compromises to water body objectives	Yes; no compromises to water body objectives.
4. No effects on other water bodies	Yes; no impact on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.

1.38 Tidal River Arun Desalination (DES_Aru20): Sussex

	WFD water body name Sussex									
	WFD water body t		Coastal Water							
	WFD managemen		South East Tra			WFD wa	iter	GB640	704540003	
	River Basin Distri	ct	South East							
		W	FD Designation	D Designations, Objectives and Mitigation						
	WFD Status and	RBMP2 O	verall Status	Object	ive (2	2021)		Object	ive (2027)	
	Objectives		derate		-			G	Good	
dy	Hydromorphologi	cal designatio	n	Heavily modified	b					
Water body	Water Body Mitigation Measure	litigation No published mitigation m								
			WFD	Protected Are	as					
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Hahitate		rates ective	Shellf Direct		Urban Waste Water Treatment Directive	
	YES	NO	YES	NO	NO	1	NO		NO	
	Scheme components potentially affecting water body		Construction: New discharge outfall Operation: Discharge of briny waters to Sussex coastal waters – 20Ml/d output							
WFD assessment (scoping)	WFD element	RBMP2 (2015) status	Assessed sta	tus (constructi	on aı	nd operat	ion)			
nt (sc	· Fish	Not assessed	assessed	construction me	thods	and any t	empora	ry risks t	y good practice o the water body	
mei	 Invertebrates 	Good	~ ~ ~ ~						construction will	
sessi	 Macroalgae 	Not assessed	assessed	not cause deter				•		
D as	· Phytoplankton	Not assessed	assessed	Sussex Coastal	WB	due to the	e new d	lischarge		
W	· Angiosperms	Not assessed	Not assessed	via the Littlehampton WwTW long sea outfall. The pro- new discharge is located approximately 1km to the east mouth of the River Arun in the Sussex coastal water body				o the east of the water body.		



			dispersion within the same water body. It is estimated that the worst-case scenario would be for salinity levels to be 10% above ambient in an area of <0.21ha in surface area. This is just over 0.001% of the surface area of the water body. A wider area would be subject to raised salinity levels of <10% above ambient and therefore less than the EC threshold for salinity discharges to shellfish waters. Further investigation would be needed to determine the chronic effect of slightly raised salinity levels over time on ecology and WFD status.				
			Therefore, it is considered unlikely that a hypersaline plume originating from the Arun discharge would cause a WFD status deterioration. The discharge may impact salinity locally and therefore may affect the localised distribution of invertebrate communities but this is unlikely to have a major effect on fauna across the wider water body. Any slight risk would generally be expected to reduce according to the volume of brine discharged, with lower discharge rates resulting in lower risk.				
Chemical (Overall)	Good	Good	The risk of deterioration of chemical status is assessed as negligible.				
Protected Area Det		Water, situate Impacts on be at a significant Nutrient sense associated we nitrate concert higher sensity beds approximaximum eq	ers: at the water body is associated with the Littlehampton Bathing ed in close proximity to the Littlehampton long-sea outfall (<1km) athing water quality are unlikely if the discharge outfall is situated int distance from the shore. Sitive areas (Nitrate vulnerable zones): The coastal water body is with a nutrient sensitive area; however, the scheme will not affect entrations or the management of this protected area. The closest civity WFD habitats to the proposed discharge are sub-tidal kelp climately 1km distance from the outfall and beyond the likely utilibrium distance stated above.				
Does the compone							
1. No deterioration because	petween status		terioration between status classes is anticipated, although further				
classes 2. No impediments t	to GES/GED		nt would improve understanding of long-term effects. pediments to achieving Good Ecological Potential.				
		,					
3. No compromises to water body objectives		Yes; no co	mpromises to water body objectives.				
bodies	4. No effects on other water bodies		pact on other water bodies.				
Assists attainment body objectives		No; does n	No; does not assist with the attainment of water body objectives.				
6. Assists attainment area objectives	nt of protected	No; does n	No; does not assist with the attainment of protected area objectives.				

1.39 Medway Estuary WTW Indirect Potable Water Reuse (PWR_Mot20)

	WFD water body	y name	Len						
	WFD water body	y type	River						
	WFD mana catchment	agement	Medway		WFD water boo	GB106040018430			
	River Basin Dist	trict	Thames						
ody	WFD Designation	ns, Object	ives and Mitigat	ion					
d 7	WFD Status	RBMP2 O	verall Status Objective (20)21)	Objective (2027)			
Water body	and Objectives	Moderate		-		-			
	Hydromorpholo designation	gical	Heavily modifie	ed					
	Water Body Mitigation Measure	No publish	blished mitigation measures						



	WFD Protected	Areas								
	Bathing Water Directive	Drinking Water Directive	Conservatio of Wild B Directive		Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive		
	NO	NO	NO		NO	YES	NO	NO		
	Scheme co	mponents		Construction: N/A						
	body	g	Operation: New 20MI/d discharge of treated effluent from Medway Estuary WwTW into one of the two small streams that flow into the River Len							
	WFD element	RBMP2 (2015) status			(construction a			<i>y</i> . 2011		
	· Fish	Poor	Uncertain	The discharge will be treated to tertiary standards for ammonia phosphate and BOD, and therefore, there will be negligible risk of impacting the physico-chemical quality elements of this water body (currently at moderate status). The proposed treatment will also include a process (either UV AO or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organ chemicals such as endocrine disruptors causing deterioration to fis status.						
WFD assessment (scoping)	· Macro- invertebrates	Good	Uncertain	the relation flow school ope of flow which is a constant of the state	There is a risk of deterioration due to changes in the flow regime the River Len, in changing from the existing flow regime, due to the relative volume of the proposed discharge compared existing rive flow. Based on the Q95 exceedance river flow and proposes scheme output, the river would, contain 41.6% effluent durit operation at low flows. This change in flow regime poses a high river of flooding and potential morphological changes to parts of the riverwhich are not channelized. In addition, a potential increase in flows of this nature would be expected to disrupt normal flow patterns (depth and velocity) in relatively small watercourse such as the River Len. This would likely to change patterns of detritus deposition and seasonal deand would be expected to reduce the frequency of natural low flow events. Consequently, this change in the hydrological process continuate the resident ecology, including fish and macroinvertebrate potentially altering the composition, growth rate and structure these biological elements and possibly resulting in a change to WF status. Brown trout are known to be present here and would be expected to migrate within the river system and utilise gravel are for spawning. Any substantial, year-round increase in flow continuations.					
	Macrophytes Phytobentos	Not assessed	Not assessed	spe und hyd	cies. Therefore, erstand the re rological process	further investionships besender the	gation is recor etween existi he invertebrate	of this particular nmended to better ng and potential and fish ecology. JV AOP and would		
	Chemical (Overall)	Good	Good	be p	permitted through	n the EA disch	narge permit co	ontrols. The risk of		
		rotected Area Details vulnerable zo the managen				deterioration in chemical status is therefore assessed as negligible. sitive areas: The water body is associated with a surface water nitrate one under the Nitrates Directive. However, the scheme will not affect ment of the protected area and no significant changes in water quality d; the discharge would be permitted through the EA discharge permit				
	Does the compo	-		Objec	tive					
	 No deterio status classes No impedimer 		Uncerta		ere is a potentia		ioration betwe	en status classes,		
	3. No compromis objectives		ody	com	promises to wate	er body objecti	ves.			



4. No effects on other water bodies	Yes; no effects on other water bodies.
5. Assists attainment of water body objectives	No; does not assist with the attainment of water body objectives.
6. Assists attainment of protected area objectives	No; does not assist with the attainment of protected area objectives.

1.40 Raising Bewl by 0.4m (RES_RaB1)

	WFD water body		Bewl Water							
	WFD water body		Lake							
	WFD manageme		Medway			WFD water body ID		GB30644398		
	River Basin Dis	trict	Thames							
		W	FD Designation	D Designations, Objectives and Mi						
	WFD Status	RBMP2 Ov	erall Status	Objectiv	e (2021	21) Objective (2027)				
dy	and Objectives	Mode	erate	-					-	
r bo	Hydromorpholo	gical designati	on	heavily modifie	ed					
Water body	Water Body Mitigation Measure	No published I	mitigation meas	ures						
			WFD	Protected Area	as					
	Bathing Water Directive	Drinking Water Directive	Conservati on of Wild Birds Directive	Habitats Directive	Nitrates Directive		Shel Dire	lfish ctive	Urban Waste Water Treatment Directive	
	NO	YES	NO	NO NO NO					YES	
	Scheme components potentially affecting waterbody		Construction: Raising the dam crest and construction of a new wave wall with embankments designed to prevent any adverse effects on Ancient Woodland. Operation: Raising of Bewl Water, by 0.4m to increase storage and yield.							
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)					1)		
ing)	· Chironomids (CPET)	Not assessed	Not assessed	methods and a assessed as lo	any tempow. Tem	oorary ri porary e	sks to the	ne water lue to co		
assessment (scoping)	· Macrophytes	Not assessed	Not assessed	The reservoir i	s a hea ssessed	vily mod	lified wa	ter body	ential to	
WFD assessn	· Phytoplankt on	Not assessed	Not assessed	impact macrophytes locally if they are present due to the change in water levels. Detailed surveys would be carriculated as part of the design of the scheme to ascertain any specific risks to marginal macrophytes and where necessary compensatory measures will be agreed with a Environment Agency within the overall reservoir water body. This scheme will not involve any increased discharge of water from the reservoir to the downstream watercourse or any additional or larger scour valve release testing. The extra storage capacity will enable the river regulation releases to be maintained for a longer period of time in drought conditions. The changes in maximum depth and storage volume from this option are minor and will not let to any material changes to the operation of the reservoir					ald be carried certain any here greed with the oir water scharge of atercourses e testing. The gulation of time in he depth and di will not lead	



				respect of its water quality and/or stratification processes. There is no change to the abstraction licence conditions governing abstraction from the River Medway System, with the additional capacity being filled by abstraction during high river flow conditions. For these reasons there is no risk of WFD status deterioration as a result of this scheme to either the reservoir WFD water body or the Medway water body.				
Chemical (Overall)	Good	Go		There is a negligible risk of deterioration between chemical status classes.				
Protected Area	Details	water r schem signific Drinkir Protec chemic	nitrate v e will no cant cha ng Wate ted Area cal statu	itive Areas: The water body is associated with a surface rulnerable zone under the Nitrates Directive. However, the of affect the management of the protected area and no larges in water quality are expected. For Protected Area: the water body is a Drinking Water a but there is negligible risk of adversely affecting the last of the water body or increasing nutrient loading that might lisk of algal blooms in the reservoir.				
Does the compo	onent comply w	ith WF	D Objec	ctive				
 No deterioration classes 	on between statu	ıs	Yes; n	o deterioration between status classes.				
2. No impedimen	ts to GES/GEP		Yes; no impediment to GEP.					
No compromis objectives	3. No compromises to water body objectives			o compromises to water body objectives.				
4. No effects on other water bodies			Yes; no impact on other water bodies.					
5. Assists attainment of water body objectives				No; does not assist with the attainment of any mitigation water body objectives.				
6. Assists attainn objectives	nent of protected	d area	,	bes not assist with the attainment of any mitigation measures ed for the protected areas.				

1.41 Tidal River Arun Desalination (DES_Aru10): Sussex

	WFD water body	name	Sussex						
	WFD water body	type	Coastal Water						
	WFD managemen	t catchment	South East Tra	С	WFD wat body ID	GB64	GB640704540003		
	River Basin Distri	ict	South East						
		W	/FD Designation	s, Objectives	and Mitigation				
	WFD Status and	RBMP2 C	verall Status	Object	ive (2021)	Obje	ctive (2027)		
	Objectives	Mo	derate		-		Good		
dy	Hydromorphologi	ical designatio	n H	leavily modified	t				
Water body	Water Body Mitigation Measure	No published	d mitigation meas						
			WFD	Protected Area	as				
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitats Directive	Nitrates Directive	Shellfish Directive	Urban Waste Water Treatment Directive		
	YES	NO	YES	NO	NO	NO	NO		
ם <u>-</u>		Scheme components		Construction: New discharge outfall					
WFD	potentially affecti body	ng water	Operation: Dis output	charge of briny	waters to Suss	ex coastal wa	ters – 10Ml/d		



WFD element	RBMP2 (2015) status	Assessed s	tatus (construction and operation)			
· Fish	Not assessed	Not assessed	Construction of the outfall will be managed by good practice construction methods and any temporary risks to the water body			
Invertebrates	Good	Good	are assessed as low. Temporary effects due to construction will			
Macroalgae	Not	Not	not cause deterioration of the water body.			
Phytoplankton	Not	Not .	There is a potential risk of impact on the aquatic ecology in the Sussex Coastal WB due to the new discharge of briny waters			
- Angiosperms	Not assessed	Not assessed	via the Littlehampton WwTW long sea outfall. The proposed new discharge is located approximately 1km to the east of the mouth of the River Arun in the Sussex coastal water body. Modelling of other hyper-saline discharges for larger desalination plants (up to 200Ml/d output) has indicated good dispersion within the same water body. It is estimated that the worst-case scenario would be for salinity levels to be 10% above ambient in an area of <0.21ha in surface area. This is just over 0.001% of the surface area of the water body. A wider area would be subject to raised salinity levels of <10% above ambient and therefore less than the EC threshold for salinity discharges to shellfish waters. Further investigation would be needed to determine the chronic effect of slightly raised salinity levels over time on ecology and WFD status. Therefore, it is considered unlikely that a hypersaline plume originating from the Arun discharge would cause a WFD status deterioration. The discharge may impact salinity locally and therefore may affect the localised distribution of invertebrate communities but this is unlikely to have a major effect on fauna across the wider water body. Any slight risk would generally be expected to reduce according to the volume of brine discharged, with lower discharge rates resulting in lower risk.			
Chemical (Overall)	Good	Good	The risk of deterioration of chemical status is assessed as negligible.			
Protected Area De	tails	Water, situal Impacts on bat a significal Nutrient sens associated voitrate concertighter sensibeds approximate.	ers: at the water body is associated with the Littlehampton Bathing ted in close proximity to the Littlehampton long-sea outfall (<1km) bathing water quality are unlikely if the discharge outfall is situated int distance from the shore. Sitive areas (Nitrate vulnerable zones): The coastal water body is with a nutrient sensitive area; however, the scheme will not affect entrations or the management of this protected area. The closest tivity WFD habitats to the proposed discharge are sub-tidal kelp kimately 1km distance from the outfall and beyond the likely quilibrium distance stated above.			
Does the compone	ent comply wi					
No deterioration I classes		Yes; no de	eterioration between status classes is anticipated, although further nt would improve understanding of long-term effects.			
2. No impediments	to GES/GEP		spediments to achieving Good Ecological Potential.			
3. No compromises objectives			ompromises to water body objectives.			
No effects on oth bodies	er water	Yes; no im	Yes; no impact on other water bodies.			
5. Assists attainment body objectives	nt of water	No; does r	No; does not assist with the attainment of water body objectives.			
6. Assists attainmer area objectives	nt of protected	No; does r	not assist with the attainment of protected area objectives.			



1.42 Portsmouth Harbour WTW Indirect Potable Reuse (PWR_Bit40)

	(1 111/D10									
	WFD water bod	-	Itchen							
	WFD water bod	, ,,	River							
	WFD n catchment	nanagement	Test and Itchen WFD v body ID					GB107	042022580	
	River Basin Dis	trict	South East							
	WFD Designation	ons, Objective	es and Mitigation	on						
	WFD Status	RBMP2 Ove	rall Status	Objective (2	2021)		Obje	ctive (20)27)	
Ş	and Objectives	Good		-			-			
99	Hydromorpholo	gical designa	ation	Not designated	artificial	or heavily	y modifi	ed		
Water body	Water Body Mitigation Measure	No published	I mitigation mea	sures						
	WFD Protected	Areas								
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birds Directive	Habitate	Nitrate Directi	_	Shellfish Directive		Urban Waste Water Treatment Directive	
	NO	YES	NO	YES	YES		NO		YES	
	Scheme components		Construction	: New discharge	outfall					
	potentially affe body	cting water	Operation: New 40Ml/d discharge of treated effluent to R Itchen to support abstraction at Lower Itchen							
	WFD element	RBMP2 (2015) status	Assessed sta	tatus (construction and operation)						
(6)	· Fish	High	High	Construction of the outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body. The discharge will be treated to tertiary standards for ammonia, phosphate and BOD, and therefore, there will be a low risk of impacting the physico-chemical quality elements of this water body (currently at high status). The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status. Based on the Q95 exceedance river flow and proposed scheme output, the river would contain 14% effluent during operation at low flows. In this instance, the proposed discharge point is						
WFD assessment (scoping)	· Macro- invertebrates	High	High							
	Macrophytes & Phytobentos	High	High	relatively close to Southampton Water (approximately 5 upstream) where, due to the size and nature of the river, so buffering capacity against the impact of change in flow could expected. In addition, the distance between discharge point a Lower Itchen (where re-abstraction will occur) appears to be sh (< 1 km). Therefore, the changes in flow regime would not expected to exert a major impact on the WFD status of resid					the river, some n flow could be narge point and ears to be short e would not be atus of resident be localised	
	Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as negligible.						



	king water protected area: the water body (River Itchen) is a Drinking Water ected Area but there is no risk of adversely affecting the chemical status at water body scale. Furthermore, Southern Water will want to ensure no risks a drinking water supplies.						
Protected Area Details	Nutrient sensitive areas: The water body is associated with a surface water nitrate vulnerable zone under the Nitrates Directive. River Itchen is a nutrient sensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted through the EA discharge permit controls. SAC: The HRA stage 1 screening identified the potential for LSEs on the River Itchen SAC, see the HRA screening report for further information.						
Does the component comply v	rith WFD Objective						
 No deterioration between sta classes 	Yes; no deterioration between classes, however further assessment is required.						
2. No impediments to GES/GEP	Yes; no impediments to GES.						
3. No compromises to water b objectives	Yes; no compromises to water body objectives.						
4. No effects on other water bod	es Yes; no effects on other water bodies.						
5. Assists attainment of water b objectives	No; does not assist with the attainment of water body objectives.						
6. Assists attainment of protectives	No; does not assist with the attainment of protected area objectives.						

1.43 Portsmouth Harbour WTW Indirect Potable Reuse (PWR_Bit60)

	<u> </u>	,									
	WFD water bod	y name	Itchen								
	WFD water bod	River									
	WFD n catchment	nanagement	Test and Itche			WFD water body ID		GB107042022580			
	River Basin Dis	trict	South East								
	WFD Designations, Objectives and Mitigation										
	WFD Status	RBMP2 Ov	erall Status		Objective (2021)			Objective (2027)			
dy	and Objectives	Good		-		-					
po	Hydromorpholo	gical designa	ation	Ν	ot designated	artificial	or heavi	ly modifi	ed		
Water body	Water Body Mitigation Measure	No published	olished mitigation measures								
	WFD Protected	d Areas									
	Bathing Water Directive	of Wild Rirds		Habitats Directive	Nitrates Directive		Shellfish Directive		Urban Waste Water Treatment Directive		
	NO	YES	NO		YES	YES YES		NO		YES	
ī	Scheme components potentially affecting water		Construction: New discharge outfall								
WFD assessment	body	Operation: New 60MI/d discharge of treated effluent to R Itchen to support abstraction at Lower Itchen									
M asse:	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)								



· Fish	High	High		Construction of the outfall will be managed by good practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body. The discharge will be treated to tertiary standards for ammonia,						
			phosphate and BOD, and therefore, there will be a low risk of impacting the physico-chemical quality elements of this water body (currently at moderate status).							
Macro-invertebrates		High		The proposed treatment will also include a process (either UV AOP or reverse osmosis) to remove the majority organic chemical contaminants. Therefore, there will be a low risk of organic chemicals such as endocrine disruptors causing deterioration to fish status.						
				Based on the Q95 exceedance river flow and proposed scheme output, the river would contain 19.5% effluent during operation at low flows. In this instance, the proposed discharge point is relatively close to Southampton Water (approximately 5 km						
Macrophytes Phytobentos	High	High		upstream) where, due to the size and nature of the river, some buffering capacity against the impact of change in flow could be expected. In addition, the distance between discharge point and Lower Itchen abstraction appears to be short (< 1 km). Therefore it would be unlikely that the increase in flow would exert a major impact on the WFD status of resident biological elements although some local disturbance may be found.						
Chemical (Overall)	Good	Good	i	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as negligible.						
Protected Area Details Protected Area Details Nutricularity sensity the significant sign			king water protected area: the water body (River Itchen) is a Drinking Water tected Area but there is no risk of adversely affecting the chemical status at water body scale. Furthermore, Southern Water will want to ensure no risks s drinking water supplies.							
			trient sensitive areas: The water body is associated with a surface water rate vulnerable zone under the Nitrates Directive. River Itchen is a nutrient estive area under the Urban Waste Water Treatment Directive. However, escheme will not affect the management of the protected area and no nificant changes in water quality are expected; the discharge would be emitted through the EA discharge permit controls.							
				The HRA stage 1 screening identified the potential for LSEs on the River a SAC, see the HRA screening report for further information						
Does the component comply with WFD Objective										
1. No deterioration between status			Yes; no deterioration between classes, however further assessment is							
				required. Yes; no impediments to GES						
3. No compromises to water body				Yes; no compromises to water body objectives.						
objectives			Yes; no effects on other water bodies.							
5. Assists attain	5 Assists attainment of water hody			No; does not assist with the attainment of water body objectives.						
objectives 6. Assists attainment of protected										
area objectives			No; does not assist with the attainment of protected area objectives.							



1.44 Woolston WwTW Indirect Potable Reuse (PWR_Wol5)

	WFD water body	name	Itchen					•				
	WFD water body		River									
	WFD m	Test and Itchen				WFD		GB107042022580				
	River Basin Distr	ict	South East									
	WFD Designation	ns, Objective	s and Mitigat	ion								
	WFD Status	RBMP2 Ov	erall Status	Obj	ective (2021))		Objective (2027)				
	and Objectives	Good		-				-				
dy	Hydromorpholog	tion	Not designated artificial or heavily modified									
Water body	Water Body Mitigation Measure	No publishe	d mitigation m	neasures								
	WFD Protected A	reas										
	Bathing Water Directive	Drinking Water Directive	Conservation of Wild Birective	-	Habitats Directive	Nitrat Direc		Shellfish Directive		Urban Waste Water Treatment Directive		
	NO	YES	NO		YES	YES		NO		YES		
	Scheme components potentially affecting water body		Construction	n: Ne	ew discharge	outfall						
			Operation: New 5MI/d discharge of treated effluent from Woolston WwTW to R Itchen to support abstraction at Lower Itchen									
	WFD element	RBMP2 (2015) status	Assessed status (construction and operation)									
	· Fish	High	High	Construction of the discharge outfall will be managed by g								
	· Macro- invertebrates	High	High	practice construction methods such that any risk to the water body is low. Temporary effects due to construction are unlikely to cause deterioration of the water body.								
WFD assessment (scoping)	· Macrophytes & Phytobentos	High	High	The discharge will be treated to tertiary standards for ammor phosphate and BOD. The proposed ammonia levels in the treat effluent would allow ammonia to remain at high status. Theref there will be negligible risk of impacting the physico-chem quality elements of this water body (currently at good status). The proposed treatment will also include a process (either AOP or reverse osmosis) to remove the majority organic chem contaminants. Therefore, there will be a low risk of organicals such as endocrine disruptors causing deterioration fish status.						e treated herefore, chemical atus). either UV chemical organic		
WFD				Discharges will be used to offset abstraction at Lower Itchen during low flows and therefore, the scheme is considered unlikely to have a negative impact on river ecology (and invertebrates in particular). Overall, the scheme will not pose any risk of deterioration to WFD elements.								
	Chemical (Overall)	Good	Good	The discharge will be tertiary treated with RO or UV AOP and would be permitted through the EA discharge permit controls. The risk of deterioration in chemical status is therefore assessed as low.								
	Protected Area D	etails	Drinking water protected area: the water body (River Itchen) is a Drinking Water Protected Area but there is no risk of adversely affecting the chemical status at the water body scale. Furthermore, Southern Water will want to ensure no risks to its drinking water supplies;									



	Nutrient sensitive areas: The water body is associated with a surface water intrate vulnerable zone under the Nitrates Directive. River Itchen is a nutrient tensitive area under the Urban Waste Water Treatment Directive. However, the scheme will not affect the management of the protected area and no significant changes in water quality are expected; the discharge would be permitted brough the EA discharge permit controls.					
	SAC: HRA stage 1 screening identified the potential for LSEs on the River Itchen SAC, see the HRA screening report for further information.					
Does the component comply w	th WFD Objective					
 No deterioration between stat classes 	Yes; no deterioration between status classes.					
2. No impediments to GES/GEP	Yes; no impediments to GES					
No compromises to water bo objectives	Yes; no compromises to water body objectives.					
4. No effects on other water bodie	Yes; no effects on other water bodies.					
Assists attainment of water bo objectives	No; does not assist with the attainment of water body objectives.					
6. Assists attainment of protect area objectives	No; does not assist with the attainment of protected area objectives.					

