

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

Non-Technical Summary

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Version 1



from
**Southern
Water** 

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1. Introduction

Water companies in England and Wales are required to produce a Water Resources Management Plan (WRMP) every five years. The Water Resources Management Plan 2019 (WRMP19) 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 WRMP19, the 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 and national water resource planning guidance.

Southern Water has assessed the potential implications of its WRMP19 on WFD objectives, both in isolation and in-combination.

2. WFD assessment approach

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. A series of objectives based on Article 4 of the WFD have been developed for the WRMP19 WFD assessment 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. 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 2015 River Basin Management Plans (RBMP) to help attain the WFD objectives for the water body (or the environmental objectives set out in the 2015 RBMPs) are not compromised
- Objective 4: To ensure the achievement of the WFD objectives in other waterbodies within the same catchment are not permanently excluded or compromised

Two further objectives were included to assess whether an option, programme or this plan as a whole 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.

A sequential process for undertaking WFD assessments has been applied as follows:

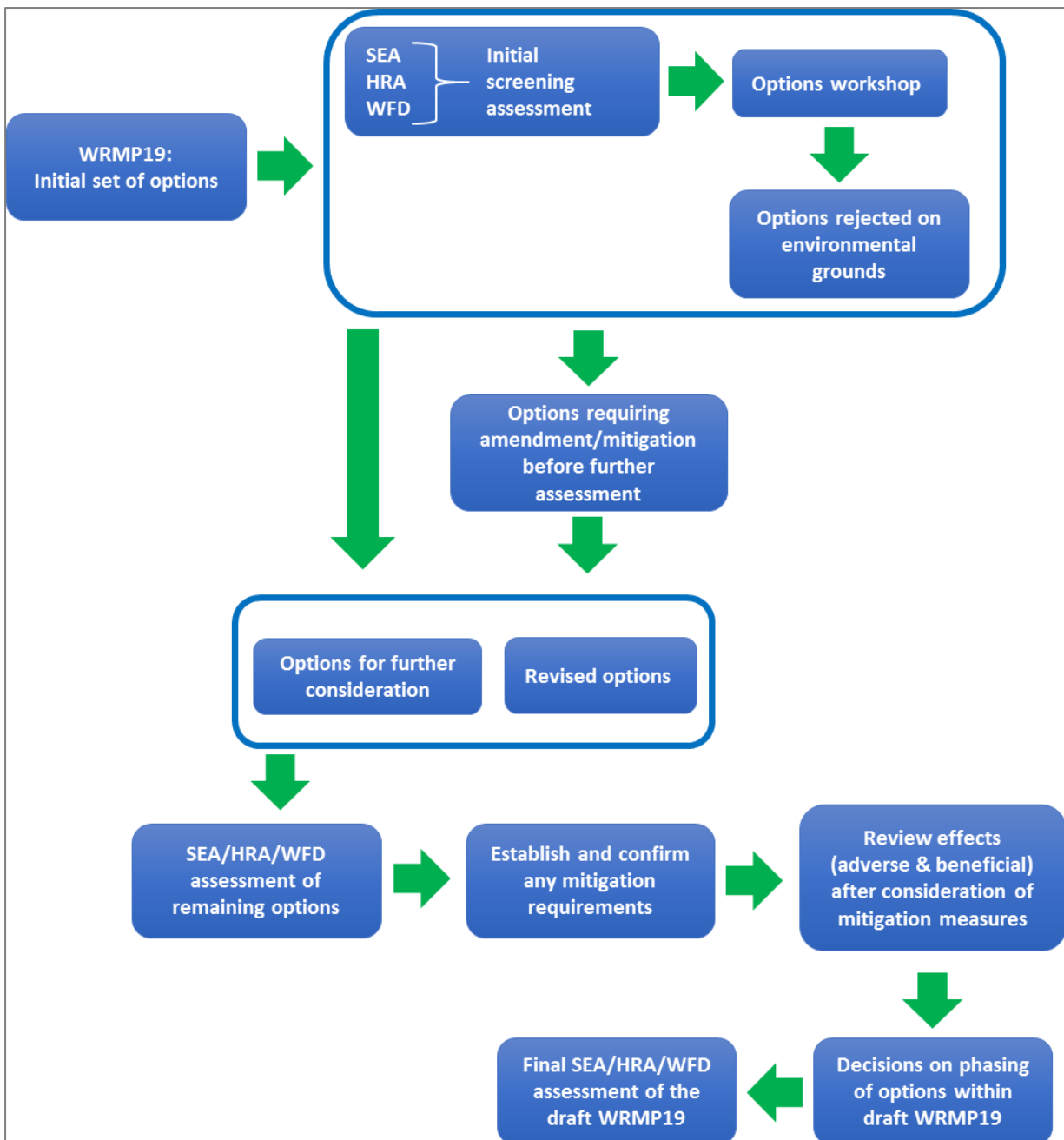
- WFD compliance assessment screening of options
- WFD compliance assessment of feasible options
- Preferred programme WFD compliance statement
- In-combination assessment of the preferred programme with other projects, plans or programmes

The diagram below shows how the WFD assessment process has been integrated with the Strategic Environmental Assessment (SEA) and Habitats Regulations Assessment (HRA) process.

3. WFD screening

Two stages of WFD screening have been carried out for the WRMP19. Initially, a high level screening process was carried out on the unconstrained list of options to rule out options with likely high risks of WFD status deterioration. A second stage of screening of the constrained list of options was then carried out, resulting in several options being rejected due to high risks of WFD status deterioration. All of the remaining feasible supply-side options were then subject to the full WFD compliance assessment process.

Figure 1 Integration of the WFD assessment into the Water Resource Management Plan process



4. WFD compliance assessment for options on the feasible list

A WFD compliance assessment for all options included in the feasible list was carried out. The demand management, river restoration and catchment management options in the WRMP19 were screened out of further assessment as there is no risk of temporary or permanent deterioration in WFD status as a result of their implementation.

For the feasible supply-side options, the majority of the screened-out options involved transfers of water by pipeline or abstractions from confined aquifers and therefore posing a negligible risk of deterioration to any WFD water bodies. The remaining options were resource options including groundwater abstraction, surface water abstraction, reservoir capacity increase, indirect potable water reuse and desalination. These options were assessed in more detail for WFD compliance. The majority of the feasible options were assessed as being compliant with WFD objectives, however, there were some uncertainties for a small number of WFD assessments as follows:

- Groundwater resources: uncertainties relating to the hydraulic connectivity between the groundwater sources and groundwater-dependent rivers or wetlands
- Desalination: uncertainties relating to the impact of the brine discharge in certain estuaries
- Indirect potable reuse: uncertainties relating to increased flows in the rivers from the treated effluent discharge during times of low flows.

5. WFD compliance assessment for the WRMP

Table 1 shows the conclusions of the WFD assessment for each of the supply-side options included in the WRMP19 for each of Southern Water's three operational areas, along with the strategic alternative options for each area.

Table 1 WFD assessment summary for each supply-side option included in the WRMP19 and strategic alternative schemes

Option name	Option ID	Operational area	WFD Compliance	
			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 (18 MI/d)	PWR_Ecc18	Eastern area	Compliant	
Recommission Meopham greensand groundwater source	BR_LuG	Eastern area	Compliant	
Stourmouth WSW (10MI/d with 20MI 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 (10MI/d)	DES_Sho10	Central area	Compliant	
Pulborough groundwater licence variation	LV_Har	Central area	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 (20MI/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	

Option name	Option ID	Operational area	WFD Compliance	
			Assessment	Reason for option not being confirmed as compliant
Additional import from Portsmouth Water (Havant Thicket reservoir development)	BS_PWC2	Western area	Compliant	
Fawley Desalination Modular to 75 MI/d	DES_Faw75	Western area	Compliant	
WSW near Cowes - reinstate & additional treatment	GWA_Bro	Western area	Compliant	
Sandown WwTW Indirect Potable Reuse (8.5MI/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 (10MI/d)	PWR_WRE	Central	Uncertain	Uncertainty surrounding the effect of increased river flows and possible temperature effects on aquatic ecology
Winter transfer Stage 2: turbidity/sludge handling process improvements at Pulborough	IZT_Har1	Central	Compliant	
Fawley desalination (modular 75-100MI/d)	DES_FawM100	Western Area	Compliant	
Sandown coastal desalination IOW (8.9 MI/d)	DES_San9	Western Area	Compliant	
Itchen indirect water reuse: Combined Portsmouth Harbour and Fareham WwTWs to River	PWR_BPC90	Western Area	Uncertain	Uncertainty surrounding the effect of increased river flows and possible

Option name	Option ID	Operational area	WFD Compliance	
			Assessment	Reason for option not being confirmed as compliant
Itchen Indirect Potable Reuse (90 MI/d)				temperature effects on aquatic ecology
Itchen indirect water reuse: Woolston and Portswood WwTW Indirect Potable Reuse (20.5MI/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 assessment has indicated that, with two exceptions, the options included in the WRMP19 strategies are compliant with WFD requirements.
- 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 non-compliance 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 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 Water Industry National Environment Programme (WINEP) 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.

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).

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. For the Sandown WTW Indirect Potable Reuse option, the alternative would be the Sandown desalination scheme.

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 (see Table 1) that:

- The Brighton WTW Indirect Potable Reuse scheme (10 MI/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 (10MI/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 WwTWs indirect potable reuse scheme (90 MI/d), Option 2: combined Woolston and Portswood WwTWs indirect potable reuse scheme (20.5MI/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)

6. Cumulative WFD compliance assessment

The potential for cumulative effects between each option within the WRMP19 has also been assessed. Options that have the potential to impact the same water bodies have been grouped and assessed.

Two water bodies were identified as potentially being at risk of adverse effects from cumulative operation of two or more options and requiring cumulative WFD compliance assessment:

- Southampton Water transitional water body (Test Estuary WTW industrial reuse and Fawley Desalination (75MI/d) schemes)
- Western Rother river water body (Pulborough Groundwater Licence Variation: and Littlehampton Water Reuse Scheme)

Cumulative effects on these two WFD water bodies were assessed as compliant with WFD objectives.

Assessment of the potential cumulative effects with water resources management options proposed for inclusion in the Water Resource Management Plans of neighbouring water companies has also been undertaken. The assessment made use of outputs of the Water Resources South East group (WRSE)¹ environmental assessments of strategic water supply options. The cumulative effect assessment has not identified any cumulative impacts between Southern Water's WRMP19 and that of neighbouring water companies that may lead to WFD status deterioration of any water body.

An in-combination WFD assessment with other plans and projects (beyond WRMPs), including Southern Water's Drought Plan 2019. No operations from other plans and projects that may have in-combination effects on WFD water bodies with the WRMP19 were identified.

¹ Water Resources South East group (WRSE) is an alliance of the six South-East England 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.

7. WRMP19 WFD compliance

For the vast majority of the options included in Southern Water's WRMP19 strategies, the WFD assessment has demonstrated compliance with WFD objectives and statutory requirements. There are two options within the preferred programme, and four strategic alternatives, where further investigations are required to confirm WFD compliance. The cumulative effect assessment has not identified any cumulative impacts between schemes included in Southern Water's WRMP19, with existing or proposed WRMP19 operations of neighbouring water companies, or with any other plans or projects.