Revised Draft Water Resource Management Plan 2024

Annex 19: Water Framework Directive Assessment Report- Addendum

Addendum July 2024
Version 1.0

from Southern Water

Contents

1 Introduction

Following the submission of the interim revised draft Water Resources Management Plan WRMP 2024 and accompanying Environmental Reports (i.e. Strategic Environmental Assessment (SEA), Habitats Regulation Assessment (HRA) and Water Framework Directive (WFD) Assessment) in September 2023, changes have been made to Southern Water's Water Resources Management Plan 2024 (WRMP24) to reflect on-going discussions with statutory bodies and the consequent additional work carried out by Southern Water. As a result, the Environmental Reports (SEA, HRA and WFD) and appendices need to be updated to reflect these changes and accompany the revised draft WRMP24 (rdWRMP24) on a further consultation with statutory bodies and the public.

This addendum report sets out changes to the WFD Compliance Assessment compared to the September 2023 report. It presents only changes to the assessment as a result of new and removed options. The September 2023 report should still be referred to for the full assessment.

1.1 Changes to Options between September 2023 and July 2024

There have been a number of changes to the list of options since the September 2023 report. Most notably, this includes five new supply options:

- Drought option - supply side (HSW): Sea tankering from Norway (45Ml/d)
- Groundwater (HAZ): Recommission Chilbolton (0.5Ml/d)
- Groundwater (HRZ): Remove constraints at Kings Sombourne (2.5Ml/d)
- Groundwater (SNZ): Petersfield refurbishment (1.6Ml/d); and
- Groundwater (SNZ): Reinstate West Chiltington (3.1Ml/d).

It may be noted above that one of the new options is a drought option. The WFD compliance assessment undertaken in September 2023 did not consider drought options, to avoid double counting and ensure consistency of approach and conclusions with the Drought Plan. However, the drought option listed above has to date not been assessed in Southern Water's Drought Plan. It has therefore been included here, with other supply-side options, to ensure that all options have been subject to an appropriate level of assessment.

In addition to the new options listed above, there have been some changes to option names, implementation dates and yields. These generally do not have a material bearing on the WFD compliance assessment, but the changes have been reviewed and relevant changes taken account of where required.

1.2 Methodology

There have been no changes to the overall assessment methodology compared to the September 2023 assessment, and hence the September 2023 report should be referred to for details of the methodology. The following steps have been taken in this addendum:

- Stage 1 (basic screening) and Stage 2 (detailed screening) assessments have been undertaken for the five new supply-side options and are presented in Section 2. For all other options, the main report from September 2023 should be referred to.
- A review has been undertaken of all other options involving a new or altered abstraction or discharge, to identify any changes to the yield of options. In any such cases, the validity of the existing assessments has been reviewed.
- Stage 3 (Plan level assessment) and Stage 4 (Cumulative assessment with other plans/projects) assessments have been revised to take account of the removed and new options. The catchments relevant to the removed and new options have been identified, and revised cumulative assessments for those catchments only are presented in Sections 3 (Stage 3) and 4 (Stage 4). For other catchments, the main report from September 2023 should be referred to.

2 Option-level WFD Assessment (Stage 1 and Stage 2)

2.1 Stage 1 and Stage 2 WFD assessments of new options

The results of the screening (Stage 1) and impact assessment (Stage 2) of the new options are given in full in **Appendix A** and **Appendix B** respectively, and summarised in **Table 1**.

All five options were taken forward from Stage 1 to Stage 2. At Stage 2 the following conclusions were drawn:

- One option is anticipated to be potentially compliant (with medium confidence);
- Two options are anticipated to be potentially compliant (with low confidence);
- Two options are anticipated to be potentially non-compliant (with low confidence).

No options were identified as being non-compliant (high confidence). For the potentially non-compliant options it is possible that further evidence and design detail could allow different conclusions to be drawn, e.g. at the outcome of ongoing Water Industry National Environment Programme (WINEP) investigations. Therefore, these options can be retained for further consideration.

As discussed in the main WFD compliance assessment report (September 2023), there are a variety of options available from the wider pool of the constrained option list which passed the Stage 1 assessment, and so may be available for Southern Water to supply the deficit of the relevant water resource zone (WRZ) even if further assessment shows that some options are not compliant with the WFD because their impacts cannot be mitigated. In addition, if required, Southern Water will discuss with the Environment Agency the potential for the application of Regulation 19 to individual options, in line with guidance issued by the Environment Agency (2023)[1].

2.2 Review of changes to other options

The list of options has been reviewed to identify any other material changes to supply options, in terms of potential influences on WFD classification, compared to the September 2023 assessment. This has focussed on options requiring a Stage 2 WFD compliance assessment. In addition to the five new supply options identified above, the following changes have been identified that have potential to influence the WFD compliance assessment:

- Option ‘Storage (SNZ): Western Rother licence and storage programme has been removed. This option had been concluded to be Compliant (low confidence) alone. The removal of this option has been taken into account in the Stage 3 and 4 cumulative and in-combination assessments, in relation to other options in the same catchment.
- The larger capacity variant of option ‘Recycling (SNZ): Horsham with storage at Pulborough (11.5Ml/d)’ has been selected, having previously been assessed at the lower variant of 6.8Ml/d in the September 2023 assessment. The September 2023 assessment concluded that this option would be Compliant (low confidence) alone. This was a qualitative assessment, the principles of which will still apply to the higher yield of 11.5Ml/d, although it should be recognised that a higher yield will result in greater potential for measurably altering the water environment and potentially affecting WFD compliance.
- Some changes to the timing of desalination options (Isle of Sheppey, Thames Estuary and East Thanet). These do not change the conclusions of the September 2023 assessment.

[1] Environment Agency (2023) WFD for water company water resources permissions. External guidance LIT 65716, published 27/03/2023

Table 1: Summary of WFD Compliance Assessment of new preferred options

Option Type	Option name	Outcome	Rationale
Groundwater	Groundwater (HAZ): Recommission Chilbolton (0.5Ml/d)	Compliant (low conf.)	Increase in recent actual abstraction within licence limits may affect the water balance of the River Test Chalk, and have an influence on flows in the River Test. The Abstraction Licence Strategy (ALS) shows there is restricted water available at Q_{95}, with water available at Q_{70}, Q_{50}, Q_{30}. Changes to the hydrological regime, water quality, river continuity and morphological conditions due to change in baseflow could impact fish and invertebrate populations. However, restricted water availability applies only further downstream, and is protected by a Hands-off Flow (HoF). Therefore, local flow changes, within existing licence, should be acceptable and downstream impacts avoided by HoF (and potentially associated reduction in other sources)
Groundwater	Groundwater (HRZ): Remove constraints at Kings Sombourne (2.5Ml/d)	Compliant (low conf.)	Increase in recent actual abstraction within licence limits may affect the water balance of the River Test Chalk, and have an influence on flows in the River Test. The ALS shows there is restricted water available at Q_{95}, with water available at Q_{70}, Q_{50}, Q_{30}. Changes to the hydrological regime, water quality, river continuity and morphological conditions due to change in baseflow could impact fish and invertebrate populations. However, restricted water availability applies only further downstream, and is protected by a HoF. Therefore, local flow changes, within existing licence, should be acceptable and downstream impacts avoided by HoF (and potentially associated reduction in other sources)
Groundwater	Groundwater (SNZ): Petersfield refurbishment (1.6Ml/d)	Potentially non-compliant (low conf.)	Increased groundwater abstraction (within the current licence quantity) could result in reduced river flows. The Arun & Western Stream ALS has restricted water available in the catchment, and the scheme is subject to an ongoing WINEP investigation. Pending the outcome of that investigation, a precautionary conclusion of potential non-compliance with the WFD is appropriate.
Groundwater	Groundwater (SNZ): Reinstate West Chiltington (3.1Ml/d)	Potentially non-compliant (low conf.)	Increased groundwater abstraction (within the current licence quantity) could result in reduced river flows. The Arun & Western Stream ALS has restricted water available in the catchment, and the scheme is subject to an ongoing WINEP investigation. Pending the outcome of that investigation, a precautionary conclusion of potential non-compliance with the WFD is appropriate.
Drought option-supply side	Drought option- supply side (HSW): Sea tankering from Norway (45Ml/d)	Compliant (med. conf.)	Tankered water would be discharged to a lake near the Test surface water WSW, which would be of a different origin and chemistry from the Blackwater catchment. However, the Lake does not discharge to the river, and is clay-lined so there would be no leakage to groundwater. Therefore, it may be assumed that there will be no impact on WFD compliance as a result of this option.

3 Programme-level WFD Assessment (Stage 3)

This section and **Appendix C** (water body scale) and **Appendix D** (catchment scale) set out changes to the cumulative assessments since September 2023. The September 2023 report should be referred to for all other water bodies and catchments.

Table 2 considers potential changes to the waterbody-scale cumulative assessment in four water bodies. In summary, for each of these water bodies:

- GB107041012780 (Petworth Stream): There is one option that may be non-compliant alone. The compliance assessment does not change cumulatively.
- GB107041012810 (Western Rother): There are five options in the catchment of this water body, three of which have the potential to alter river flows. Use of multiple options together could result in a cumulative impact.
- GB40701G503100 (Lower Greensand Arun & Western Streams): There are three options involving abstraction from this groundwater body. Use of multiple options together could result in a cumulative impact.
- GB40701G501200 (River Test Chalk): There are now four options involving abstraction from this groundwater body. However, due to other constraints that limit abstraction in the Test catchment, non-compliance with the WFD is not anticipated either alone or cumulatively.

The main river catchments containing multiple options have also been considered (where the water bodies may be in the same or different water bodies in the wider catchment, but could potentially converge at a downstream point).

Table 3 considers potential changes to the catchment-scale cumulative assessment in three catchments:

- There are a total of six options in the Adur catchment. However, the majority involve construction activities only, and those with potential operational impacts are unlikely to interact with each other to an extent that would influence WFD compliance. Therefore, there are unlikely to be cumulative impacts in this catchment.
- There are a total of six options in the Arun catchment, of which five could result in changes to river flows, although when used collectively, they may balance each other out to some extent. Some of these options are currently subject to a WINEP investigation that has not yet concluded. Therefore, cumulative effects are possible, beyond the extent of individual options, but the scale and nature of those effects would require further assessment, informed by the outcomes of the WINEP investigation.
- There are a total of nine options in the Test catchment, with five involving construction only. The other four options involve abstraction from the River Test Chalk. As noted above, due to other constraints that limit abstraction in the Test catchment, non-compliance with the WFD associated with those options is not anticipated either alone or cumulatively.

While no change to the categorisation of level of confidence of WFD compliance/non-compliance has been identified as a result of this cumulative assessment, compared to the individual option assessments, further investigation is required for most options (both individually and cumulatively) in order to better understand their impacts on WFD status. It is likely that, as described in the preceding paragraphs, there is the potential for some impacts to be 'more' non-compliant with WFD, when considered cumulatively at the plan level, compared to the options individually.

Table 2: Cumulative Assessment of the Preferred Plan: waterbody-level assessments that have changed from September 2023.

WFD Waterbody	Options Contributing to Cumulative Impacts	Cumulative Assessment Summary
GB107041012780 (Petworth Stream)	Groundwater (SNZ): New borehole at Petworth (4Ml/d) Bulk import (SNZ): SEW RZ5 to Pulborough	Following the removal of 'Storage (SNZ): Western Rother licence and storage programme' option, there is no longer potential for cumulative impact on this waterbody. However, the Petworth option alone may still have an impact on baseflow to the Petworth stream. **No cumulative effects in this water body, compared to individual options.**
GB107041012810 (Western Rother)	Groundwater (SNZ): New borehole at Petworth (4Ml/d) Bulk import (SNZ): SEW RZ5 to Pulborough Recycling (SNZ): Littlehampton WTW with river discharge (15Ml/d) Recycling (SNZ): Horsham WTW with storage at Pulborough (6.8Ml/d) Petersfield refurbishment (1.96 Ml/d)	The following options only involve construction activities in the catchment of the surface waterbody and it is assumed that this can be completed without deteriorating the WFD status: – Bulk import (SNZ): SEW RZ5 to Pulborough – Recycling (SNZ): Horsham WTW with storage at Pulborough (6.8Ml/d) The increased groundwater abstraction from the Lower Greensand Arun & Western Streams due to the new borehole at Petworth and refurbishment of Petersfield groundwater abstraction could reduce upstream flows prior to the treated effluent discharge point from the Littlehampton recycling option, and therefore change the assumption of river dilution capacity that would be used to define the water quality standards of the treated effluent discharge. This in turn could lead to a deterioration in physico-chemical quality elements, particularly since point source water industry discharge is the Reason for Not Achieving Good Status (RNAG) for the moderate phosphate sub-quality element. **Cumulative effects of multiple options on this water body could result in increased levels of WFD non-compliance compared to individual options.**
GB40701G501200 (River Test Chalk)	Groundwater (HAZ): Recommission Chilbolton (0.5Ml/d) Groundwater (HRZ): Remove constraints at Kings Sombourne (2.5Ml/d) Groundwater (HSW): New boreholes at Romsey (4.8 Ml/d) Groundwater (HSW): Test MAR (5.5 Ml/d)	The Chilbolton, Kings Somborne and Romsey options would all involve additional abstraction (within existing licensed quantities) from the River Test Chalk. However, restricted water availability in the catchment applies only further downstream, and is protected by a HoF. Therefore, local impacts, within existing licence, should be acceptable and downstream impacts avoided by the HoF (and potentially associated reduction in other sources). The Test MAR option involves recharge of the confined chalk aquifer during periods of high flows in the River Test. The water would then be abstracted from the Chalk aquifer during periods of low flows in the river. This option is not expected to affect river flows because it would abstract from the confined aquifer.

WFD Waterbody	Options Contributing to Cumulative Impacts	Cumulative Assessment Summary
		Therefore, these options cumulatively would not be expected to be non-compliant with respect to the River Test Chalk, in relation to dependent surface water body status or any other classification elements.
GB40701G503100 (Lower Greensand Arun & Western Streams)	Groundwater (SNZ): Petersfield refurbishment (1.6Ml/d) Groundwater (SNZ): Reinstate West Chiltington (3.1Ml/d) Groundwater (SNZ): New borehole at Petworth (4Ml/d)	All three options will increase groundwater abstraction from the Greensand above recent levels, but within the existing licensed quantity. Southern Water is currently undertaking a WINEP investigation to develop the Pulborough groundwater model (which covers the Greensand water body) and assess potential impacts of abstraction on rivers and designated sites. This includes the West Chiltington and Petworth options. Until the WINEP investigation concludes, it must be assumed that impacts on dependent surface waters or Groundwater Dependent Terrestrial Ecosystems (GWDTEs) are possible. This is in line with the ALS current conclusion that there is restricted water available at the groundwater body level. **Cumulative effects of multiple options on this water body could result in increased levels of WFD non-compliance compared to individual options.**

Table 3: Cumulative assessment of the Preferred Plan: operational catchment level assessments that have changed from September 2023.

Operational Catchment	Options (WRSE-ID)	Cumulative Assessment Summary
Adur	Recycling (SNZ): Horsham WTW with storage at Pulborough (6.8Ml/d) Storage (SNZ): River Adur Offline Reservoir (19.5Ml/d) Treatment capacity (SWZ): Pulborough winter transfer stage 1 (2Ml/d) Interzonal transfer (SWZ-SBZ): Pulborough winter transfer stage 2 (4Ml/d) Interzonal transfer (SNZ-SWZ): Pulborough to Worthing Interzonal transfer (SBZ-SWZ): Brighton to Worthing Groundwater (SBZ): Lewes Road (3.5Ml/d) Groundwater (SNZ): Reinstate West Chiltington (3.1Ml/d)	In the catchments associated with the River Adur and Western Rother, the impacts of the following options are only construction activities: – Interzonal transfer (SBZ-SWZ): Brighton to Worthing – Interzonal transfer (SNZ-SWZ): Pulborough to Worthing – Recycling (SNZ): Horsham WTW with storage at Pulborough (6.8Ml/d) – Treatment capacity (SWZ): Pulborough winter transfer stage 1 (2Ml/d) – Interzonal transfer (SWZ-SBZ): Pulborough winter transfer stage 2 (4Ml/d) Greater surface water abstraction from the Upper Adur Catchment due to the River Adur Offline Reservoir option and increased groundwater abstraction from West Chiltington potentially affecting flows in Lancing Brook, could have a cumulative effect on the tidal River Adur. The Lewes Road abstraction would not be expected to contribute to this cumulative effect, because it is in the Brighton Chalk Block, which the Adur and Ouse ALS states does not contribute significantly to River Adur flow. The ALS shows there is water available in the lower Adur at Q_{95} to Q_{30} and the streams are discharge rich. Therefore, it is considered relatively unlikely that cumulative effects would have an impact on WFD status in the tidal Adur, and hence in the Adur catchment as a whole. **Cumulative effects are unlikely, over and above the effects associated with individual options in relevant water bodies in the Adur catchment.**
Arun	Bulk import (SNZ): SEW RZ5 to Pulborough Recycling (SNZ): Horsham WTW with storage at Pulborough (11.5 Ml/d) Recycling (SNZ): Littlehampton WTW with river discharge (15Ml/d) Groundwater (SNZ): New borehole at Petworth (4Ml/d) Groundwater (SNZ): Petersfield refurbishment (1.6Ml/d) Groundwater (SNZ): Reinstate West Chiltington (3.1Ml/d)	In the operational catchments associated with the River Arun the impacts of the following option are related to construction activities only and are assumed to be WFD compliant: – Bulk import (SNZ): SEW RZ5 to Pulborough Of the remaining schemes: – The reduction of the discharge of treated effluent into the Arun, due to the transfer of the discharge to storage at Pulborough, was considered compliant (low confidence) alone, because the river is discharge rich and a reduction in discharge may improve water quality. – The Littlehampton recycling scheme, in contrast, was considered potentially non-compliant due to potential physico-chemical impacts from the addition of further nutrient loading to the Western Rother. However, the scheme would also add additional water to the river, which may be beneficial. – The three options involving groundwater abstraction have the potential to reduce river flows in the Western Rother and other tributaries, and subsequently downstream in the tidal Arun, and have all been identified as being potentially non-compliant. Two of these sources are currently subject to a WINEP investigation, the outcome of which could potentially alter the conclusions of this assessment. The effects of reduced flows associated with the groundwater options would be offset by the Littlehampton recycling scheme if all were to be operated together (although the balance of losses and gains cannot be reliably quantified from the level of evidence available). **Cumulative effects are possible, beyond the extent of individual options, but the scale and nature of those effects requires further assessment.**

Operational Catchment	Options (WRSE-ID)	Cumulative Assessment Summary
Test	Bulk import (HAZ): T2ST to Andover Interzonal transfer (HWZ-HAZ): Winchester to Andover bi-directional (15Ml/d) Interzonal transfer (HAZ-HKZ): Andover to Kingsclere bi-directional (10Ml/d) Interzonal transfer (HSE-HWZ): Otterbourne WSW to Yew Hill WSW bi-directional (74Ml/d) Groundwater: Test MAR (5.5Ml/d) Groundwater (HRZ): New boreholes at Romsey (4.8Ml/d) Groundwater (HRZ): Remove constraints at Kings Sombourne (2.5Ml/d) Groundwater (HAZ): Recommission Chilbolton (0.5Ml/d) Drought option- supply side (HSW): Sea tankering from Norway (45Ml/d)	In the operational catchments associated with the River Test, the impacts of the following options are only construction activities and are classified as WFD compliant: – Bulk import (HAZ): T2ST to Andover Interzonal transfer (HWZ-HAZ): Winchester to Andover bi-directional (15Ml/d) – Interzonal transfer (HAZ-HKZ): Andover to Kingsclere bi-directional (10Ml/d) Interzonal transfer (HSE-HWZ): Otterbourne WSW to Yew Hill WSW bi-directional (74Ml/d) – Drought option- supply side (HSW): Sea tankering from Norway (45Ml/d) The remaining options that could have operational impacts on the Test and its tributaries are: Test MAR, Romsey new boreholes, Kings Sombourne and Chilbolton recommissioning. The alone assessment of the reinstated/replaced groundwater sources concludes compliance (low confidence) since the restricted water availability on the Test only applies to the downstream river and a HoF exists to protect the downstream waterbody. The downstream protection means that this conclusion should not change even if multiple of these options are implemented together. The stage 2 screening of the Test MAR scheme concluded that the scheme was Compliant (low.confidence) since there are no WFD surface waterbody or GWDTE receptors in connectivity with the confined aquifer and the scheme is designed to balance water availability. The four groundwater schemes will abstract from the same groundwater body however, since the MAR scheme is designed to balance the recharge and abstraction of the groundwater body there should be no long or short term impact on the WFD status from this scheme. **No cumulative effects, that would result in a change to WFD status, are therefore anticipated in this catchment.**

4 Preferred rdWRMP24 WFD Assessment Stage 4 Results: assessment against other Plans and Projects

The potential for combined impacts of Southern Water's rdWRMP24 with other water companies' WRMP24s has been reviewed, compared to the September 2023 report. This assessment relies on information received regarding other companies' plans in September 2023, from the Water Resources South East (WRSE) revised draft Regional Plan.

The changes to Southern Water's options since September 2023 do not result in any changes to the conclusions in terms of in-combination effects with other water companies. This is because the new and removed options are all in catchments where other water companies do not have any options. The September 2023 report should be referred to for overall compliance with other water companies' plans.

5 WFD compliance summary of Southern Water's rdWRMP24

The September 2023 report should be referred to for the full assessment and conclusions. While changes to the rdWRMP24 result in some changes to elements of the WFD compliance assessment in July 2024, there are no changes to the overall conclusions compared to the September 2023 assessment. Some of the new individual options assessed in this addendum have been concluded to be potentially non-compliant with low confidence. Some potential cumulative effects between options, as well as potential in-combination effects with other water companies, could also occur. The conclusion therefore remains that the Preferred Plan could be potentially non-compliant with the WFD.

In all cases of potential non-compliance, further evidence and assessment is required. Some options are part of ongoing investigations, which may enable revised conclusions regarding WFD compliance. Given the significant lead in time for some options, it is considered to provide an adequate period within which to conclude such investigations and establish conclusions with which the regulator would concur. However, if a conclusion of potential non-compliance remains, Southern Water would review the potential to use alternative water resource options already assessed as passing the initial Stage 1 WFD assessment from its original constrained options list.

Appendix A: Results of Stage 1 assessments of new options

This Appendix is available separately and presents the results of the Stage 1 assessments for the options that are new to the July 2024 version of the revised draft WRMP.

Appendix B: Stage 2 assessments for relevant Preferred options in the revised draft WRMP

This Appendix is available separately and presents the Stage 2 assessments for relevant options, for water bodies that were identified as being required further assessment at Stage 1.

Appendix C: Stage 3 cumulative assessments: water body-level assessments

This Appendix is available separately and presents the cumulative assessment for individual water bodies, where there are change to the assessments in the July 2024 version of the revised draft WRMP.

Appendix D: Stage 3 cumulative assessments: Operational Catchment-level assessments

This Appendix is available separately and presents the cumulative assessment at the Operational Catchment level, where there are change to the assessments in the July 2024 version of the revised draft WRMP.