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Water Resources West, Dŵr Cymru Welsh Water, Hafren Dyfrdwy, Severn Trent, South Staffordshire Water, United Utilities

Water Resources West Draft Regional Plan

Water Framework Directive: Report

Water Resources West

Dŵr Cymru Welsh Water

HAFREN DYFRDWY severn dee

SEVERN TRENT

South Staffs Water

United Utilities Water for the North West

Report for:

Dŵr Cymru Welsh Water, Hafren Dyfrdwy, Severn Trent, South Staffordshire Water, United Utilities

and

Water Resources West (which is an unincorporated working group, operating under an agreed Terms of Reference. Its core members are Dŵr Cymru Cyfyngedig, Seven Trent Water Limited, South Staffordshire Water plc and United Utilities Water Limited.)

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Water Resources West Draft Regional Plan

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1. Introduction

1.1 Overview

Water Resources West (WRW) is the regional group of abstractors established under the Environment Agency's (EA) National Framework for Water Resources[1] (the 'National Framework') with responsibility for managing water resources in the North West of England, the West Midlands and the cross-border catchments with Wales. It comprises of five core members, Dŵr Cymru Welsh Water (DCWW), Hafren Dyfrdwy (HD)[2], Severn Trent, South Staffordshire Water (SSW) and United Utilities Water (UUW) (see **Figure 1-1**).

The National Framework requires each regional group to prepare a regional plan to set out how the supply of water for people, business, industry and agriculture will be managed in the region. The plan aims to create resilient water supplies for all users, while protecting and enhancing the environment and creating wider social benefits for the next 25 years and beyond.

In response, WRW has prepared a draft Regional Plan alongside an aligned set of Water Resources Management Plans (WRMPs) prepared by the member water companies (referred to as the 'component draft WRMPs' for the purposes of this report). The draft Regional Plan covers the period 2025 to 2085 and will address long-term regional and inter-regional, multi-sectoral water resources management pressures. It includes the water resource options from the component draft WRMP24s and Strategic Resource Options[3] (SROs) and takes into account the water supply needs of non-public water supply (non-PWS) abstractors as well as public water supplies. It includes all or part of the operational areas of DCWW, HD, Severn Trent, SSW and UUW.

The development of the draft Regional Plan is aligned with the Water Resources Planning Guideline[4] and the Welsh Government Guiding Principles[5], as applicable to England and Wales, which require that regional plans *support environmental objectives in the River Basin Management Plans*. **This report presents the Water Framework Directive (WFD) Regulations compliance assessment of WRW's draft Regional Plan**.

1.2 Water Framework Directive Assessment

The Water Framework Directive[6] is an EU Directive establishing a framework for Community action in the field of water policy which aims to protect and improve the water environment. The Directive was brought into UK law in 2003 and subsequently revoked by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 in England and Wales. From this point forward "WFD" refers to the legislation applicable to England and Wales, not the EU Directive.

WFD requirements for the WRW Regional Plan

The Water Resources Planning Guideline requires that regional plans *support environmental objectives in the River Basin Management Plans*. That Guideline sets out more detail for component WRMPs how a water company must demonstrate that they have considered the WFD regulations. The requirements for a WFD assessment of a component WRMP are outlined in the 2021 WRPG (**Box 1**).

[1] EA (2020) *Water Resources National Framework*: Appendix 2: Regional planning. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872222/Appendix_2_Regional_planning.pdf
[2] At 1st July 2018, Hafren Dyfrdwy combined the water service area of Dee Valley Water and Severn Trent lying in Wales.
[3] The Strategic Water Resource Options (SROs) programme has been initiated by Ofwat to provide at least 1500Ml/d of water to areas of England facing a water deficit. The SRO Programme includes 17 schemes which will be funded and assessed during AMP7 to determine the right portfolio of projects to be selected by Regional Plans ready for implementation in AMP8. Schemes are evaluated at a series of decision points (Gates).
[4] EA, Natural Resources Wales, and The Water Services Regulation Authority Government (2022) *Water Resource Planning Guidance* (WRPG) [online]. Available from: https://www.gov.uk/government/publications/water-resources-planning-guideline/water-resources-planning-guideline [Accessed October 2022].
[5] Welsh Government (2022) *Guiding Principles for Developing Water Resources Management Plans*. Available from: https://gov.wales/water-resources-management-plan-guidance
[6] European Union (2000) Directive 2000/60/EC of the European Parliament and of the Council

Figure 1-1 WRW Regional Plan Area

Box 1: Water Resources Planning Guideline 2021

Section 8.2.2. Assessing environmental constraints

"A. River Basin Management Plan and Water Framework Directive

River Basin Management Plan (RBMP) and the Water Framework Directive environmental objectives are a constraint on your options. You should screen out any options that have unacceptable environmental impacts that cannot be overcome.

You should ensure 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. Alternatively, if investigations are yet to be completed, you should set out what your alternative options would be should those investigations demonstrate that there will be an unacceptable environmental impact.

You should also assess new supply options against the RBMP measures and objectives for each water body and meet your obligations to avoid future deterioration. You should ensure that your feasible options do not compromise the achievement of RBMP objectives.

You should talk to the Environment Agency about any intended actions that may:

- *cause deterioration of status (or potential)*
- *prevent the achievement of the water body status objectives in the river basin management plans*
- *prevent the achievement of water body status (or potential) for new modifications*

You should do this as soon as possible before developing your plan. You should make a clear statement in your plan about any potential impacts."

The Water Resources Planning Guideline refers to ensuring 'no deterioration' of water body status. European Court of Justice (ECJ) ruling[7] clarified that 'no deterioration' 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, phyisco-chemical, etc.). This definition applies equally to Artificial Water Bodies and Heavily Modified Water Bodies 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 methodology align to this ECJ ruling.

It is noted, though not specifically linked to WFD, The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMP's) for 2020[8] outlines that water companies should have regard to Section 6 and Section 7 of the Environment (Wales) Act 2016 when producing their WRMPs. The obligations of this Act are covered in the SEA undertaken in parallel to the WFD assessment.

1.3 This Report

Ricardo Energy and Environment (Ricardo) and WSP Environment & Infrastructure UK Ltd (formerly Wood Group UK Limited) have been appointed to undertake the WFD Assessment of the WRW Regional Plan.

This report accompanies the draft Regional Plan that has been published for consultation and summarises the current assessment of WRW's preferred programme of options against the WFD assessment objectives. The remainder of this report is structured as follows:

- **Section 2** provides a summary of the draft Regional Plan, WRW's preferred programme of options (the draft Best Value Plan) and strategic transfer options (including adaptive plan pathways);
- **Section 3** summarises the approach to the WFD Assessment of the draft Regional Plan, including the assessment of plan options contained in the member water company component draft WRMPs and strategic transfers;
- **Section 4** presents the assessment of the draft Regional Plan in terms of the options that comprise WRW's draft Best Value Plan; and alternative plan pathway;
- **Section 5** sets out the provisional conclusion of the WFD Assessment of WRW's draft Regional Plan.

[7] ECJ Case C‑461/13: Bund für Umwelt und Naturschutz Deutschland v Bundesrepublik Deutschlandhttp://curia.europa.eu/juris/document/document.jsf?docid=178918&mode=req&pageIndex=1&dir=&occ=first&part=1&text=&doclang=EN&cid=175124 [accessed 30.6.16]

[8] Welsh Government (2016), The Welsh Government Guiding Principles for Developing Water Resources Management Plans (WRMP's) for 2020, April 2016

Note that the assessment presented in this report draws on the WFD Assessments of the component draft WRMPs for Severn Trent [9], SSW[10], UUW[11] and DCWW[12]. The WFD Assessments should therefore be read in conjunction with these reports. The report also draws on the WFD Assessments of the strategic transfer options prepared for Regulators Alliance for Progressing Infrastructure Development (RAPID) Gate 2 submission.

[9] Ricardo and Wood (2022) Water Framework Directive Assessment: Draft Water Resources Management Plan 2024 – Severn Trent.
[10] Ricardo and Wood (2022) Water Framework Directive Assessment: Draft Water Resources Management Plan 2024 – South Staffordshire Water.
[11] WSP (2022) United Utilities Water: Water Framework Directive Assessment of the Water Resources Management Plan 2024.
[12] WSP (2022) Dŵr Cymru Welsh Water: H Water Framework Directive Assessment of the Water Resources Management Plan 2024.

2. Water Resources Planning

2.1 Introduction

Water resources management planning is being undertaken regionally and by all water companies in England and Wales in order to ensure reliable, resilient water supplies over the long-term planning horizon.

Water resources management planning includes working out and forecasting how much water customers will need over the planning period (assessing demand) and how best to provide it (assessing options to reduce or constrain demand growth and/or augment reliable supplies of water) in an efficient, timely manner (programme appraisal). Companies (individually, and in collaboration across a region) identify the preferred, 'best value' programme of demand management and water supply options to develop an overall strategy to maintain a balance between reliable supply and demand.

2.2 Water Resources West Regional Plan

WRW is taking an integrated approach to preparing the Regional Plan and the component WRMPs and aims to provide a Regional Plan that is multi-sector and takes account of the water supply needs of non-PWS abstractors as well as public water supplies. WRW member water companies have used a regionally consistent set of methodologies to reflect local, regional and national needs into the development of their plans.

Each water company is leading development of the component WRMPs and relevant aspects of the Regional Plan in the parts of their area included with WRW as a single piece of work. This has necessitated a high degree of integration and fostered greater collaboration between companies and stakeholders. The draft WRW Regional Plan then combines the preferred water resource options from the member water companies' WRMP24s, as well as the SROs being taken forward by the companies.

In March 2020, WRW published its Initial Resource Position[13]. This identified that by 2050, an estimated 166 Ml/d[14] of additional water would be needed for public water supplies, and in the region of an additional 41 Ml/d needed for other abstractors. In an update[15] (published in February 2021) to its resource position, WRW noted that this need was potentially greater than previously estimated. WRW published its Emerging Regional Plan[16] in January 2022. This updated the forecast, taking into account a commitment to achieve a 50% reduction in leakage from the public water supply network by 2050 and a per capita consumption reduction to 110 litres/person/day (l/p/d). The updated WRW forecast identified that 215 Ml/d of new water would be needed to meet public supply demand by 2031 and that an additional 63 Ml/d would be needed by 2050, for non-PWS sectors.

Following further reconciliation with other regions (which confirmed other regional water resource requirements), the draft Regional Plan projections, taking into account demand and leakage commitments, show that by 2050 the WRW region will need an additional 223 Ml/d to meet public water supply needs and 97 Ml/d to meet the needs of other sectors.

Actions included in the draft Regional Plan aim to help increase public water supply resilience to extreme droughts and meet future demand in the region. It is estimated that the plan includes proposals that will cost £9.7bn over the plan lifetime but will bring over £2 billion net benefits to the WRW region.

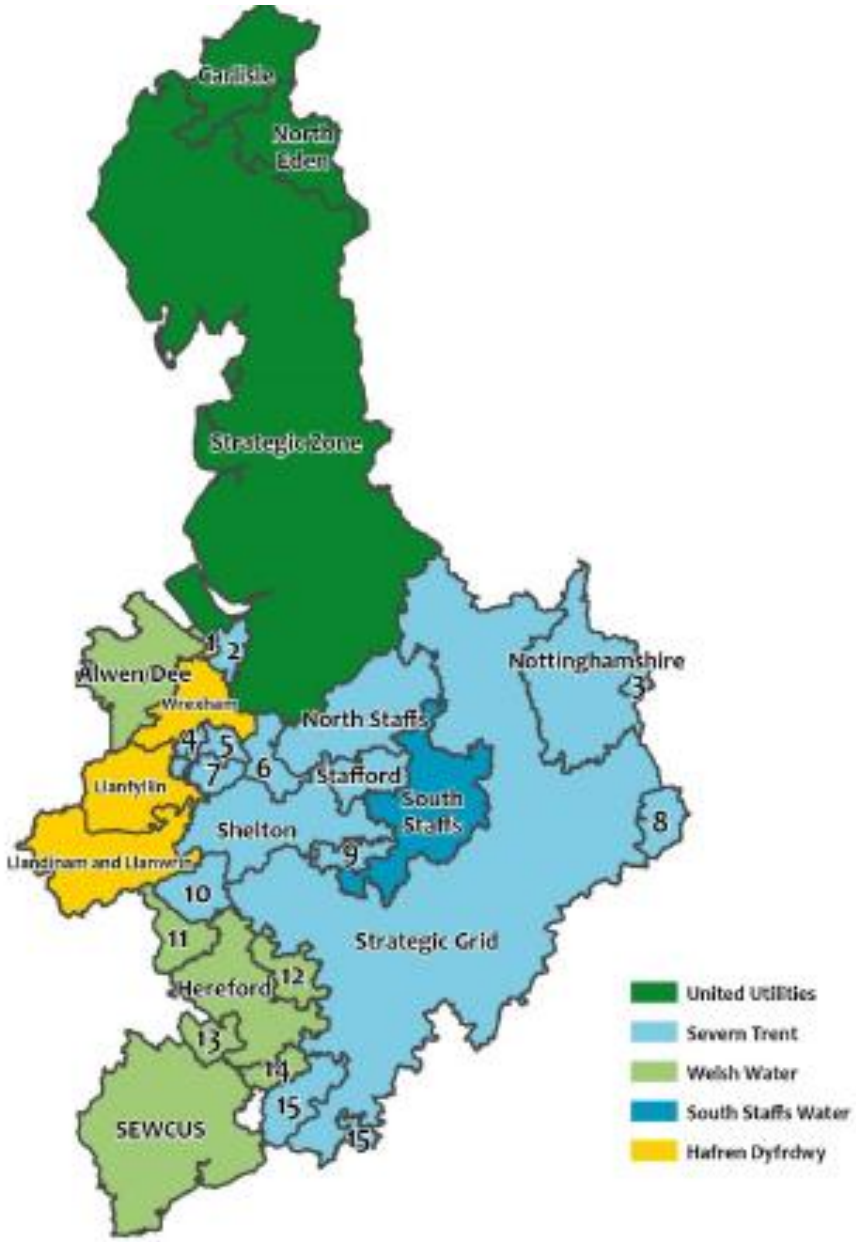
Water Resources Management Plans

Each component WRMP sets out how the balance between water supply and demand, and security of supply, will be maintained over a minimum of 25 years in a way that is economically, socially and environmentally sustainable.

[13] WRW (2020) *Initial Resource Position, March 2020*. Available from https://waterresourceswest.co.uk/s/WRW-Initial-Resource-Position.pdf [Accessed October 2022].
[14] 1Ml/d is one million litres per day, or one megalitre per day
[15] WRW (2021) *Update on our Resource Position, February 2021*. Available from https://waterresourceswest.co.uk/s/WRW-Update-on-Resource-Position-February-2021-web.pdf [Accessed October 2022].
[16] WRW (2022) Emerging Regional Plan, January 2022. Available from: https://static1.squarespace.com/static/5e67889204d86850e1fdcece/t/61e5a4e237970d62de92fa10/1642439906757/WRW+Emerging+Regional+Plan+Executive+Summary.pdf [Accessed October 2022].

For each Water Resource Zone[17] (WRZ) in the WRMP area (see **Figure 2-1**), a supply demand balance is generated for public water supply. A set of non-PWS water availability assessments is also be generated. Each supply-demand balance is structured around a consistent, "central" set of planning assumptions and is used to identify WRZs in deficit over the plan period.

Figure 2-1 WRW Regional Plan Water Company Water Resource Zones



No.	Name	Company
1	Saltney	Hafren Dyfrdwy
2	Chester	Severn Trent
3	Newark	Severn Trent
4	Mardy	Severn Trent
5	Kinsall	Severn Trent
6	Whitchurch and Wem	Severn Trent
7	Ruyton	Severn Trent
8	Rutland	Severn Trent

No.	Name	Company
9	Wolverhampton	Severn Trent
10	Bishops Castle	Severn Trent
11	Pileth	Welsh Water
12	Whitbourne	Welsh Water
13	Vowchurch	Welsh Water
14	Ross on Wye	Welsh Water
15	Forest and Stroud	Severn Trent

[17] The Water Resource Planning Guideline defines a water resource zone as "*an area within which the sources of water and distribution of water to meet demand, is largely self-contained (apart from any agreed bulk transfers)*".

The plan process initially reviews as many potential solutions as possible (the 'unconstrained list' of options) to identify 'feasible' options for each WRZ which could contribute to meeting the supply demand deficit in one or more zones. The types of options considered to provide additional water resources to meet any forecast deficit in a WRZ can include:

- **demand management options**, which include measures to manage the demand for water such as smart meters, rainwater harvesting, greywater recycling or household visits to install water efficiency measures;
- **distribution and leakage options,** which include measures to optimise the efficiency of water networks, reduce leakage and minimise any unscheduled resource losses;
- **production efficiency options**, which include measures to increase the efficiency and effectiveness of treatment processes;
- **supply options**, which comprise of measures to increase supply such as greater peak output at existing groundwater sources, reservoir or surface water supply and include SROs and catchment management options, for example nature-based solutions;
- **non-PWS options**, which include any options that increase water resource availability or reduce the need for abstraction outside of that needed for public water supplies.

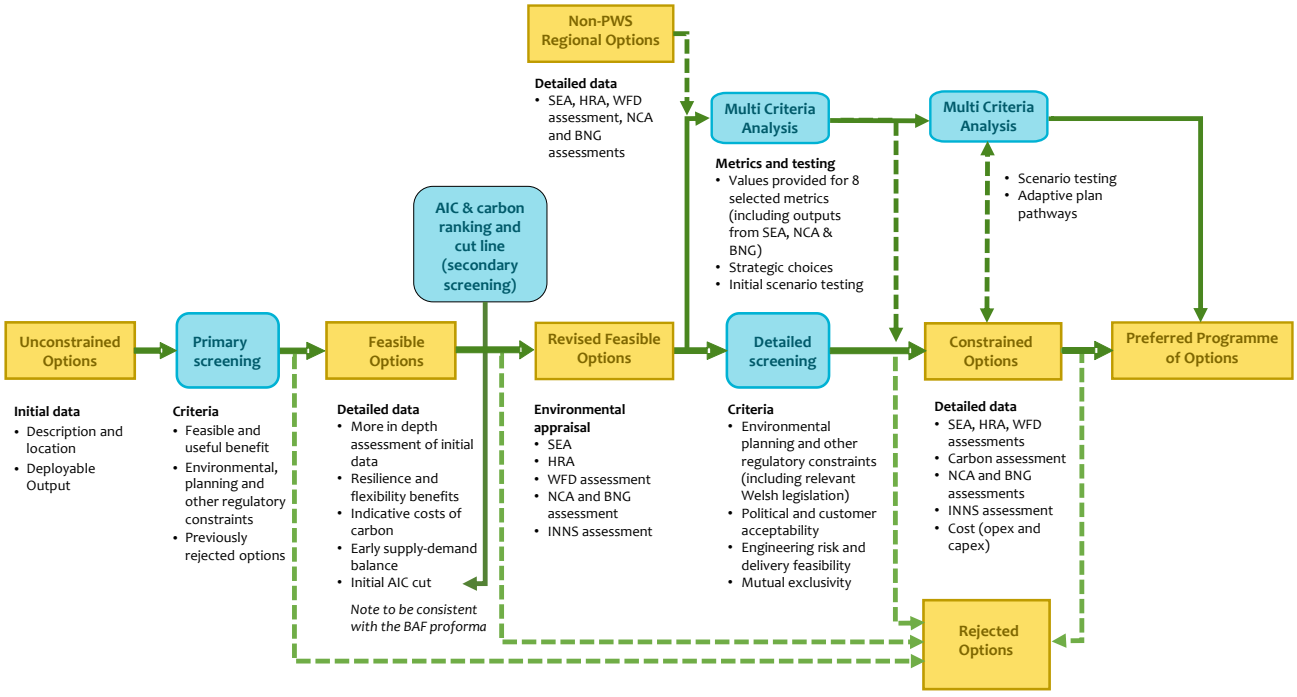
Options tend to be generated from the company responsible for the WRMP but can also be joint (where more than one company is working in partnership), provided by third parties or be multi-sector.

All zones with deficits have then been subject to a "decision making" process using a Multi-Criteria Analysis (MCA) and option screening to identify a preferred plan (comprising of selected options) to address the supply demand deficit. WRW led the development of these tools, collaborating with the core water companies and key stakeholders, including regulators. The MCA decision-making method factors in multiple costs and benefits and considers the interaction between zones to establish a best value plan for the company (and for the region as whole).

Scenarios have been used to test the preferred and any identified alternative plans. They have been used to explore what would happen if one of these plans was adopted and the future was different to that assumed in the "central" planning assumptions. The scenarios could be used to make the preferred plan an adaptive plan (in which different options could be taken forward after key decision points, if circumstances changed).

The process, and key decision points in the development of the WRMP plan and WRW Regional Plan are illustrated in **Figure 2-2**.

Figure 2-2 Environmental Assessment Inputs into Option and Plan Development



2.3 Water Resources West Draft Regional Plan

The draft Regional Plan proposes a significant reduction in water demand, through reduction in consumption and a reduction in leakage from the potable water network. Consumption reduction to 110 l/p/d by 2050 will be achieved through a range of measures rolled out by the member water companies:

- Targeted water efficiency campaigns, with household and non-household setting visits supported by partnership working.
- A significant roll-out of water meters, using enhanced or smart technologies.
- In the Midlands, adopting a policy of metering all households, linked to the water stress classification in that area.

Achieving the 110 l/p/d target will also require Government introduction of proposed[18] water labelling on water using products.

The combined benefit of the demand management options selected, including Government intervention via water labelling, is around 914 Ml/d across the WRW region.

The draft Regional Plan identifies that the largest need for new water resources arises in the Midlands to offset reductions in abstraction licences to meet environmental needs. In this context, Severn Trent requires a large number of supply options to tackle deficits. These Severn Trent options include raising the height of dams in the Derwent Valley and at other reservoirs to increase storage, investing in a number of water treatment works (WTWs) to increase deployable output, significant increases in interconnectivity and a small number of new sources. Severn Trent also proposes to take 75 Ml/d from the North West Transfer (NWT) for a period until it is required by Water Resources South East (WRSE). In addition, use of water from Minworth and Netheridge wastewater treatment works (WwTW) and a reduction in licensed abstraction at Mythe is included to support transfer of water to the South East.

SSW does not select any supply options, as they present no deficits in the 2025-2050 horizon.

In the North West, development of new water resources is linked to supporting water transfers, both within WRW and to the South East. This also provides additional benefit to UUW's customers. The proposed new sources involve increasing groundwater abstraction capability within existing licence volumes and new river abstractions from the Rivers Ribble, Irwell and Bolin. As part of the joined-up plan linked to the water transfers, this improves the level of service for temporary use bans to 1 in 40 years from 2031. Enabling works on the Vyrnwy Aqueduct are also required to facilitate the transfers.

In Wales, HD does not require any supply options, as it has no deficits to cover even in the absence of demand management policy being implemented.

DCWW will be implementing two supply options, one which focuses on upgrades to the network in the South East Wales Conjunctive Use System (SEWCUS) WRZ and one which looks at recovering losses from a WTW.

Strategic Transfers

Two strategic transfers from WRW to WRSE are included in the draft Regional Plan. These are the Grand Union Canal (GUC) transfer and the Severn to Thames Transfer (STT).

- The GUC strategic transfer will utilise the existing canal infrastructure to transfer water from the Midlands to areas of planning deficit in Hertfordshire and North West London. The scheme plans to utilise treated discharge from Minworth WwTW as the resilient source of water to supply this canal transfer. This transfer has been selected by WRSE to supply 50 Ml/d of water into the South East starting in 2031 and rising to 100 Ml/d by 2040.
- The STT will convey raw water from the River Severn into the River Thames via an interconnector. WRSE has assessed many variants of this and selected the 500 Ml/d pipeline option as part of its adaptive plan. The earliest this could come into operation is 2040; however, in the reconciliation baseline scenario it is first used to provide a supply demand balance benefit to the South East in 2050. While this transfer can access available water at high flows in the lower River Severn, as noted above, it also has multiple options that can be called upon to support abstraction from the River Severn

[18] UK Government (2022) UK mandatory water efficiency labelling consultation. Available online: https://www.gov.uk/government/consultations/uk-mandatory-water-efficiency-labelling

including a reduction in licensed abstraction at Mythe, the transfer of treated wastewater from Netheridge WwTW (known as Severn Trent Sources) and the use of treated wastewater from Minworth WwTW.

The NWT, which is one of the support elements of the STT, is also selected to meet needs within WRW. This is part of a joined-up adaptive plan, which uses 75 Ml/d of this water by Severn Trent in a low regrets way until it is needed by the South East. Severn Trent can develop other sources to be ready whenever the need in the South East arises. At that point, this element of the NWT can switch over to WRSE, via the STT.

Severn Trent faces a significant loss of abstraction licence in the Nottinghamshire area, initially in the 2030s but also in the longer term. There are limited options in this area to provide alternative sources, and the main ones are located upstream in the Derwent Valley. One option is to stop an existing transfer to Yorkshire Water, freeing up water to meet Severn Trent's needs, but this would have detrimental impacts for Yorkshire Water. Other options involve increasing reservoir storage in the Derwent Valley in various ways. It is not yet clear if reservoir storage could be increased to a size large enough to meet both Severn Trent's and Yorkshire Water's needs. Decision points in 2025 about the feasibility and 2030 about best value, allow the best option to be in place by 2035.

The GUC, STT, Minworth Effluent Reuse, Severn Trent Sources, NWT and Derwent reservoir are all SROs and subject to the RAPID separate gated[19] decision making process, supported by their own environmental assessments. Where possible, the draft WRMP24 and Regional Plan environmental assessments have been aligned with the SRO assessments.

[19] Regulators Alliance for Progressing Infrastructure Development (RAPID) was established in 2019 to "*help accelerate the development of new water infrastructure and design future regulatory frameworks. The joint team is made up of the 3 water regulators Ofwat, Environment Agency and Drinking Water Inspectorate".* Available online https://www.ofwat.gov.uk/regulated-companies/rapid/3/ [Accessed July 2022]

3. Approach to WFD Compliance Assessment

3.1 Introduction

This section describes the methodology employed for the WFD Assessment of the draft Regional Plan. As set out in Section 1.3, this report has drawn upon the findings of the WFD Assessments of the component draft WRMPs for SSW, Severn Trent, UUW and DCWW (as the options contained in WRW's draft Best Value Plan also feature in these WRMPs).

Through consultation with Natural Resources Wales, the Environment Agency and Natural England, a WFD Compliance Assessment methodology report[20] has been developed in order to ensure consistent assessment between the water companies within the WRW region for their WRMPs. For more detail on the assessment methodology for WRMPs review the referenced report.

Strategic Resource Options (SROs) have been assessed using the All Company Working Group methodology[21] in order to ensure consistency between the WFD compliance assessment of the national range of SROs.

3.2 WFD Compliance Assessment Methodology

Through consultation with Natural Resources Wales, the Environment Agency and Natural England, a WFD Compliance Assessment methodology report[22] has been developed in order to ensure consistent assessment between the water companies within the WRW region for their WRMPs. For more detail on the assessment methodology for WRMPs review the referenced report.

Strategic Resource Options (SROs) have been assessed using the All Company Working Group methodology[23] in order to ensure consistency between the WFD compliance assessment of the national range of SROs.

Though there are some inconsistencies between SRO and WRMP WFD assessment methodologies, each have been assessed against consistent WFD Assessment Objectives. In line with WRPG (2021) and UKWIR (2021) guidance the principle WFD Assessment Objectives that the draft WRMPs and SROs have been tested against are:

1. To prevent deterioration[24] of any WFD element of any surface water or groundwater body - in line with Regulation 13(2)(a) and 13(5)(a).
2. To prevent the introduction of impediments to the attainment of 'Good' WFD status or potential for any surface water or groundwater body in line with Regulation 13(2)(b) and 13(5)(c)[25].
3. To ensure that the planned programme of water body measures in RBMP2 to protect and enhance the status of water bodies are not compromised.

There are a number of further WFD Assessment Objectives, set out in the WRPG, which the SROs have tested against and been tested against at a plan-level in the WRMPs. These are considered as progressive WFD Assessment Objectives rather than tests of constraint and do not lead to WFD non-compliance where they are not achieved. These are as follows:

4. To assist the attainment of the WFD Objectives for the surface water or groundwater body – in line with Regulation 13(2)(b) and 13(2)(c)

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[20] Ricardo & Wood (2021), Water Resources West, Dŵr Cymru Welsh Water, Hafren Dyfrdwy, Severn Trent, South Staffordshire Water, United Utilities Water Resources West Regional Plan and Water Resources Management Plans 2024: Water Framework Directive: Method Statement. July 2021
[21] Mott MacDonald Limited (2020). All Companies Working Group WRMP environmental assessment guidance and applicability with SROs. Published October 2020
[22] Ricardo & Wood (2021), Water Resources West, Dŵr Cymru Welsh Water, Hafren Dyfrdwy, Severn Trent, South Staffordshire Water, United Utilities Water Resources West Regional Plan and Water Resources Management Plans 2024: Water Framework Directive: Method Statement. July 2021
[23] Mott MacDonald Limited (2020). All Companies Working Group WRMP environmental assessment guidance and applicability with SROs. Published October 2020
[24] As defined in **Section 1.3**
[25] WRPG (2021) states that this a test to identify any options that 'prevent the achievement of the water body status objectives in the river basin management plan'. At present this is RBMP2. Discussion with EA and through review of EA internal guidance[#1] identified that the EA consider 'less stringent objectives are not permanent and the assessment of any new activity or project must take into account the need to continue to aim for Good status. The new activity or project must not jeopardise the achievement of good status in the future, irrespective of whether a less stringent objective was set in RBMP2'.
[#1] EA (2021) Supporting implementation of river basin management plans position. LIT 14339. 01/2021

5. To assist the attainment of the objectives for associated WFD protected areas – in line with Regulation 13(6)
6. To reduce the treatment needed to produce drinking water and look to work in partnership with others; promoting the requirements of Article 7 of the WFD[26].

Furthermore, with reference to plans in Wales additional WFD Assessment Objectives have been identified as appropriate from OGN72[27]. Again, these are progressive WFD Assessment Objectives rather than tests of constraint and have been tested against at a plan level. These are as follows:

7. To promote the sustainable use of water as a natural resource
8. To conserve habitats and species that depend directly on water
9. To progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment
10. To progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants
11. To contribute to mitigating the effects of floods and droughts.

[26] Specifically set out in WRPG 2021 (updated 17 March 2021) at Section 9.4.5
[27] NRW. (2020). Guidance for assessing activities and projects for compliance with the Water Framework Directive. Operation Guidance Note 72

4. Assessment of the Draft Regional Plan

This section presents the assessment of the draft Regional Plan. It summarises the assessment of those options that comprise WRW's draft Best Value Plan, which has been undertaken for the component WRMPs in the WRW region and those effects of the strategic transfers that are within the WRW region. The assessment then considers the alternative plan pathway.

4.1 WFD Compliance Assessment of WRW's Draft Best Value Plan

Each water company within the WRW region has produced a draft WRMP in which the WFD compliance of each of their feasible options and preferred programme of options has been assessed. Within each water company WRMP a cumulative impact has also been undertaken to determine the cumulative WFD compliance between water company preferred programmes (with water companies within and outside the WRW region). For completeness, Appendix 1 sets out the supply side options whose operation potentially impact the water environment of the WRW area in each component WRMP and of the strategic transfers. **Table 4-1** provides the references to the WFD Assessment reports for each WRW water company and for the strategic transfers. The NWT has been selected and part of UUW preferred programme for draft WRMP24 and, as such, the assessment of this option can be found there. Upper Derwent Valley Reservoir Expansion (UDVRE) has been selected within the Severn Trent draft WRMP24 preferred programme to meet Severn Trent needs and has been assessed there, though this does not map exactly across to the SRO which is exploring options to meet needs in Yorkshire as well. This discrepancy will be addressed ahead of the final Regional Plan.

Table 4-1 Reference to WFD compliance report for each water company and strategic transfers within the WRW Region

Reference	Reference to WFD compliance report for WRMP24
A	Section 4.1 Programme-level (Stage 2) WFD Assessment in the Severn Trent draft WRMP24 WFD compliance report
B	Section 4.1 Programme-level (Stage 2) WFD Assessment in the UUW draft WRMP24 WFD compliance report
C	Section 4.1 Programme-level (Stage 2) WFD Assessment in the DCWW draft WRMP24 WFD compliance report
D	STT WFD Assessment for RAPID Gate 2
E	Minworth Transfer WFD Assessment for RAPID Gate 2
F	ST Sources SRO WFD Assessment for RAPID Gate 2
G	GUC WFD Assessment for RAPID Gate 2
H	Cumulative assessment included in Appendix 1 of this report

The draft Regional Plan includes the preferred programme from each of the water companies within WRW along with the transfer options presented in **Table 4-2**. The option codes, option names and their operational dates are set out in Appendix 1. Further option details can be found within the component WRMPs. The draft Regional Plan includes Severn Trent Option 303A (which involves a 75Ml/d release from Vyrnwy Reservoir, noting, 25 Ml/d would be via the Afon Vyrnwy and 50 Ml/d via the bypass pipeline) whereas the regional plan detailed planning tables and the draft Severn Trent preferred programme includes Option 303C (which involves a 25Ml/d release from Vyrnwy Reservoir). This late change to Severn Trent's draft WRMP was considered by WRW through regional change control and Severn Trent Option 303A was agreed to be retained in the WRW draft Best Value Plan. The 75 Ml/d is consistent with the capacity of the export included within the UUW draft WRMP24. The UUW and DCWW (SEWCUS Zone) preferred programmes of options within their respective draft WRMP24s are consistent with the options included within the WRW draft Best Value Plan.

Table 4-2 Water Resources South East- Water Resources West updated baseline reconciliation position.

Transfer option selection	Vol (Ml/d)	Operational date
GUC supported by Minworth WWTW effluent	50	2031
GUC supported by Minworth WWTW effluent (additional amount)	50	2040
STT supported by Netheridge (ST Sources SRO)	35	2050
STT supported by North West Transfer (Vyrnwy reservoir)	135	2060

Table 4-3 outlines the cumulative WFD compliance assessment of those impacts between options in the water bodies assessed. These impacts have typically been assessed in either the individual water company WRMPs or the individual SRO environmental assessments. Where additional cumulative assessment has been included in this report, these are included in **Appendix 2** (Screening) and **Appendix 3** (Assessment) and summarised in **Table 4-4**. For context, the water bodies and the WFD compliance assessment are shown in **Figure 4-1** (groundwater bodies) and **Figure 4-2** (surface water bodies).

Table 4-3 Overall WFD compliance of the water bodies impacted by the WRW draft Best Value Plan

River Basin District (and management catchment)	Water body	Option(s) impacting water body	WFD compliance summary	Assessment reported in
Humber (Derwent Derbyshire)	GB30432299 - Howden Reservoir	Severn Trent: 6 Severn Trent: 169	Compliant (high conf.)	A
	GB30432359 - Derwent Upper Reservoir	Severn Trent: 6 Severn Trent: 169	Compliant (high conf.)	A
	GB30432459 - Ladybower Reservoir	Severn Trent: 6 Severn Trent: 169	Compliant (high conf.)	A
	GB104028057880 - Derwent from Westend to Wye	Severn Trent: 6 Severn Trent: 169	Uncertain	A
	GB104028052390 - Derwent Wye to Amber	Severn Trent: 6 Severn Trent: 29 Severn Trent: 95B Severn Trent: 187C	Uncertain	A
	GB104028052310 - Derwent from Amber to Bottle Brook	Severn Trent: 426	Compliant (med. conf.)	A
	GB30433781 - Ogston Reservoir	Severn Trent: 95B	Compliant (high conf.)	A
Humber (Dove)	GB104028052770 - Churnet from Meerbrook to Leekbrook	Severn Trent: 123B	Uncertain	A
	GB104028053110 - Trent from Soar to The Beck	Severn Trent: 406	Compliant (high conf.)	A
	GB30433790 - Tittesworth Reservoir	Severn Trent: 123B	Compliant (high conf.)	A
	GB30447006 - Carsington Water	Severn Trent: 95B Severn Trent: 128 Severn Trent: 128Z Severn Trent: 190	Compliant (high conf.)	A
Humber (Humber GW)	GB40401G301200 - Tame Anker Mease - PT Sandstone Burton	Severn Trent: 64	Potentially non-compliant (low conf.)	A
	GB40401G302800 - Soar - PT Sandstone	Severn Trent: 528	Potentially non-compliant (low conf.)	A
Humber (Soar)	GB10402804684 - Tame - R Rea to R Blythe	Minworth SRO	Uncertain	E
	GB104028046880 - Soar from Thurlaston Brook to Sence	Severn Trent: 31C	Compliant (medium conf.)	A
	GB104028047180 - R Tame to R Dove	Minworth SRO Seven Trent Water Option 31D	Compliant (high conf.)	H (Cumulative RP1)
	GB104028047190 - River Sow from R Penk to R Trent	Severn Trent: 44	Compliant (medium conf.)	A

River Basin District (and management catchment)	Water body	Option(s) impacting water body	WFD compliance summary	Assessment reported in
	GB30435928 - Blackbrook Reservoir	Severn Trent: 134A	Compliant (high conf.)	A
Humber (Tame Anker and Mease)	GB104028042480 - Bourne - source to R Tame	Severn Trent: 84B	Uncertain	A
	GB104028042572 - Blythe from Patrick Bridge to R Tame	Severn Trent: 84C Severn Trent: 435	Compliant (high conf.)	A
	GB104028046440 - Tame from R Blythe to River Anker	Minworth SRO	Uncertain	E
	GB104028047050 - Tame from River Anker to River Trent	Minworth SRO	Uncertain	E
	GB104028047070 - Black Brook from Source to Grace Dieu Brook	Severn Trent: 134A	Compliant (high conf.)	A
	GB30437497 - Shustoke Reservoirs	Severn Trent: 84B	Compliant (high conf.)	A
Humber (Trent Valley Staffordshire)	GB104028047340 - Ramsley Brook from Source to Carr-New Brook	Severn Trent: 528	Uncertain	A
	GB104028047360 - Milton Brook Catchment (trib of Trent)	Severn Trent: 64	Uncertain	A
	GB104028047420 - Trent from Dove to Derwent	Minworth SRO	Compliant (high conf	E
North West (Alt and Crossens)	GB112069060640 – Downholland (Lydiate/Cheshires Lines) Brook	UUW: WR107a2	Potentially non-compliant (low conf.)	B
	GB112069064500 - Downholland Brook	UUW: WR107a2	Potentially non-compliant (low conf.)	B
	GB112069064520 - Hey/Borsdane Brook	UUW: WR149	Potentially non-compliant (low conf.)	B
North West (Mersey Upper)	GB112069060760 - Pennington Brook (Glaze)	UUW: WR149	Potentially non-compliant (low conf.)	B
	GB112069061011 – Mersey/ Manchester Ship Canal (Irwell/Manchester Ship Canal to Bollin)	UUW: WR015 UUW: WR149	Potentially non-compliant (low conf.)	B
	GB112069061012 - Mersey (Bollin confluence to Howley Weir) including Padgate Brook	UUW: WR015 UUW: WR076 UUW: WR149 UUW: WR111 UUW: WR113	Potentially non-compliant (low conf.)	B
	GB112069061020 - Spittle Brook	UUW: WR149	Potentially non-compliant (low conf.)	B
	GB112069061320 - Bollin (Source to Dean)	UUW: WR111 UUW: WR113	Potentially non-compliant (low conf.)	B
	GB112069061360 - Dean (Bollington to Bollin)	UUW: WR111 UUW: WR113	Potentially non-compliant (low conf.)	B
	GB112069061382 - Bollin (Ashley Mill to Manchester Ship Canal)	UUW: WR076 UUW: WR111 UUW: WR113	Potentially non-compliant (low conf.)	B
	GB112069061420 - Glaze	UUW: WR149	Potentially non-compliant (low conf.)	B
	GB112069061442 - Alt DS Bull Bridge	UUW: WR107a2	Potentially non-compliant (low conf.)	B
	GB112069061451 - Irwell (Croal to Irk)	UUW: WR015	Potentially non-compliant (low conf.)	B
	GB112069061452 - Irwell / Manchester Ship Canal (Irk to confluence with Upper Mersey)	UUW: WR015	Potentially non-compliant (low conf.)	B

River Basin District (and management catchment)	Water body	Option(s) impacting water body	WFD compliance summary	Assessment reported in
North West (North West AWB)	GB71210004 - Manchester Ship Canal	UUW: WR015 UUW: WR076 UUW: WR149 UUW: WR111 UUW: WR113	Potentially non-compliant (low conf.)	B
North West (North West GW)	GB41201G101100 - Manchester and East Cheshire Permo-Triassic Sandstone Aquifers	UUW: WR111 UUW: WR113	Potentially non-compliant (medium conf.)	B
	GB41201G101700 - Lower Mersey Basin and North Merseyside Permo-Triassic Sandstone Aquifers	UUW: WR102b UUW: WR107a2 UUW: WR107b UUW: WR149	Potentially non-compliant (medium conf.)	B
	GB41202G102900 - Manchester and East Cheshire Carboniferous Aquifers	Severn Trent: 22	Potentially non-compliant (low conf.)	A
North West (North West TraC)	GB531206908100 – Mersey estuary	UUW: WR015 UUW: WR076 UUW: WR149 UUW: WR111 UUW: WR113	Compliant (low conf.)	B
	GB531206908300 - Alt estuary	UUW: WR107a2	Compliant (low conf.)	B
	GB531207112400 - Ribble estuary	UUW: WR049d	Compliant (low conf.)	B
North West (Ribble)	GB112071065500 - Ribble - conf Calder to tidal	UUW: WR049d	Potentially non-compliant (low conf.)	B
North West (Weaver Gowy)	GB112068055360 - Biddulph Brook	Severn Trent: 22	Compliant (low conf.)	A
	GB112068060460 - Weaver (Marbury Brook to Dane)	Severn Trent: 58	Compliant (low conf.)	A
Severn (Avon Warwickshire)	GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk	Severn Trent: 84A	Compliant (high conf.)	A
	GB109054044140 - Leam - conf R Itchen to conf R Avon	Severn Trent: 420	Potentially non-compliant (low conf.)	A
	GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford	Seven Trent Water Option 420	Compliant (high conf.)	A
	GB30937864 - Stanford Reservoir	Severn Trent: 84A	Compliant (high conf.)	A
	GB30938250 - Draycote Reservoir	Severn Trent: 122A Severn Trent: 423	Compliant (high conf.)	A
Severn (Mid Wales)	GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	Severn Trent: 303A / STT	Compliant (med. conf.)	A / D
	GB1090540497200 - Afon Vyrnwy - conf Afon Cownwy to conf Afon Banwy	STT	Compliant (med. conf.)	D
	GB109054049852 - Afon Vyrnwy DS of Banwy confluence	STT	Compliant (med. conf.)	D
	GB109054049800- Afon Vyrnwy - conf Afon Tanat to conf R Severn	STT	Compliant (med. conf.)	D
Severn (Severn England GW)	GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined	Severn Trent: 420	Compliant (high conf.)	A
Severn (Severn England TraC)	GB530905415403 - Severn Upper	STT	Compliant (low conf.)	D
Severn (Severn Middle Worcestershire)	GB30937959 - Trimpley Reservoir	Severn Trent: 434	Compliant (high conf.)	A
Severn (Severn Vale)	GB109054032750 - Severn (E Channel) - Horsebere Bk to Severn Est	STT	Compliant (med. conf.)	D
	GB109054039760 - Severn - conf R Teme to conf R Avon	STT Severn Trent Option 66	Compliant (low conf.)	H (Cumulative RP5)
Severn (Teme)	GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk	STT Severn Trent Option 143	Compliant (med. conf.)	H (Cumulative RP3)

River Basin District (and management catchment)	Water body	Option(s) impacting water body	WFD compliance summary	Assessment reported in
	GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk	STT Severn Trent Option 33Z	Compliant (med. conf.)	H (Cumulative RP2)
	GB109054049143 - Severn conf M Wenlock-Farley Bk to conf R Worfe	STT	Compliant (med. conf.)	D
	GB109054049144 - Severn - conf R Stour to conf River Teme	STT	Compliant (med. conf.)	D
	GB109054049145 - Severn - conf R Worfe to conf R Stour	STT Severn Trent Option 309Z	Compliant (high conf.)	H (Cumulative RP4)
West Wales (South Wales Central)	GB109057027240 - Taff - conf R Cynon to conf Rhondda R	DCWW: SEW168	Compliant (low conf.)	C

There are several water bodies where impacts associated options in the WRW draft Best Value Plan are potentially WFD non-compliant, uncertain or compliant with low confidence. With options that are assessed as having potentially non-compliant impacts with a low confidence rating, these assessments are precautionary and there is the possibility that these could be compliant through further, more detailed, investigation. Those options that are assessed as having potentially non-compliant impacts with a medium/high confidence are likely to remain non-compliant after further investigation and would likely need mitigation to remove the potentially non-compliant impacts. Water bodies where there are uncertain impacts illustrate those that are potentially impacted by options, however, there is insufficient baseline data or operational understanding to be able to assess the WFD compliance. Water bodies with WFD compliant impacts with a low confidence indicate that the impacts are assessed to be compliant however the operational understanding is based on assumptions and/or there is limited data to conduct the assessment, so the assessment is based on expert judgement. Further investigation is required into these options and impacts to increase the confidence in the WFD compliant (low confidence) assessments.

Following review of the water bodies impacted by the GUC options presented in **Table 4-2** above and those impacted by options in the draft WRMPs, only one water body has been identified as being impacted cumulatively, R Tame to R Dove WFD water body (GB104028047180). This water body is cumulatively impacted by the Minworth SRO and Severn Trent Option 31D in the Severn Trent preferred plan. This impact is assessed as Cumulative RP1 in **Table 4-4**.

The STT option for the draft Regional Plan has impacts on the following River Severn catchment water bodies that coincide with the impacts from options in the Severn Trent preferred plan:

- Severn Trent Option 303A: Vyrnwy - Lake Vyrnwy to conf Afon Cownwy (GB109054049880). The adaptive nature of the WRW draft Regional Plan is that Severn Trent would operate option 303A until the Vyrnwy Release is required for the STT. As such, these options would be sequential and would not have a cumulative impact.
- Severn Trent Option 33Z: Severn - conf Bele Bk to conf Sundorne Bk (GB109054049142) assessed as Cumulative RP2
- Severn Trent Option 143: Severn - Sundorne Bk to conf M Wenlock-Farley Bk (GB109054049141) assessed as Cumulative RP3
- Severn Trent Option 309Z: Severn - conf R Worfe to conf R Stour (GB109054049145) assessed as Cumulative RP4
- Severn Trent Option 66: Severn - conf R Teme to conf R Avon (GB109054039760) assessed as Cumulative RP5.

The summary of the assessments in these water bodies is presented in **Table 4-4** which is supported by the WFD screening and WFD impact assessments presented in **Appendix 2** and **Appendix 3** respectively.

As a result of the cumulative assessment between WRMPs and transfers sourced within the WRW region, no further water bodies outside of those assessed in the individual strategic transfers or WRMP assessments were assessed as potentially WFD non-compliant. The WFD compliance at Gate 2 of the strategic transfers is summarised below, noting that this is not the final WFD compliance position for these options which are subject to further development and assessment through the Gated process.

Figure 4-1 Groundwater bodies assessed for WFD compliance from supply options and transfers included in the draft WRW Regional Plan

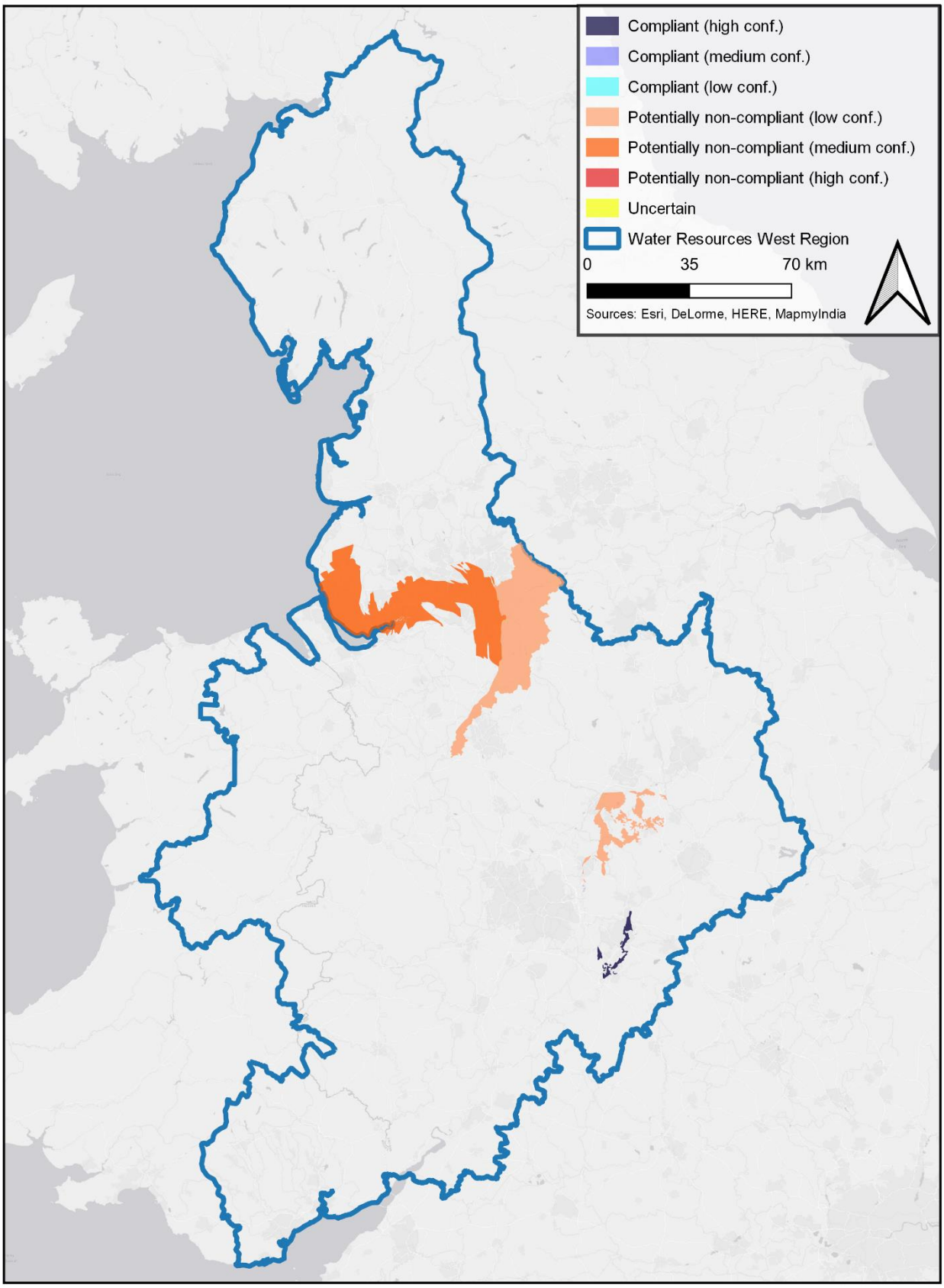

Figure 4-2 Surface water bodies assessed for WFD compliance from supply options and transfers included in the draft WRW Regional Plan

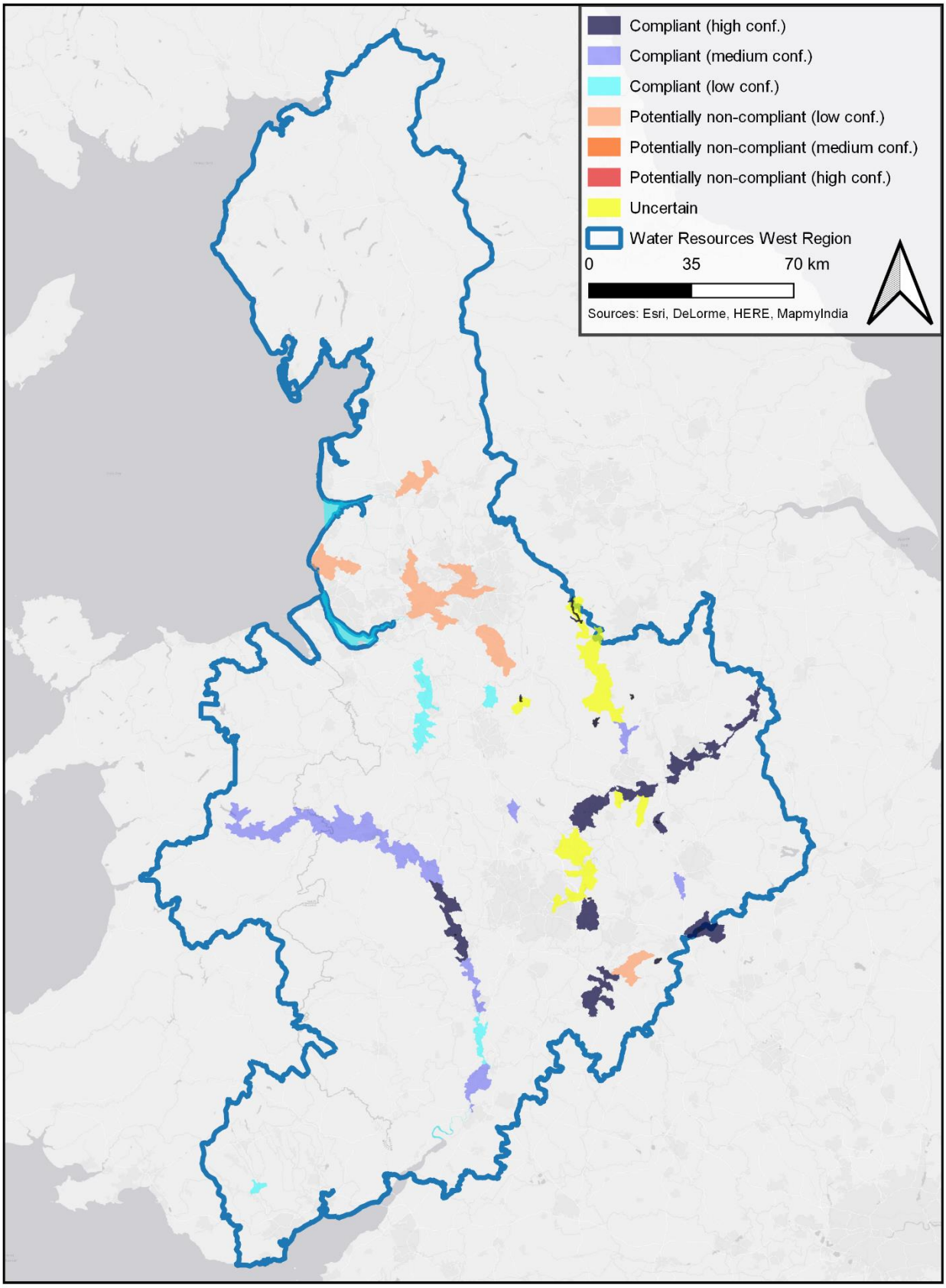

Table 4-4 WFD compliance of the additional water bodies impacted cumulatively by WRMP options and transfers within the WRW draft Regional Plan.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028047180 - R Tame to R Dove WFD water body	Minworth SRO Seven Trent Water Option 31D (Cumulative RP1)	Compliant (high conf.)	
GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk	STT Severn Trent Option 33Z (Cumulative RP2)	Compliant (med. conf.)	This assessment is driven by the Severn Trent WRMP option alone. It is expected that the relative increase in flows as a result of the STT support from Vyrnwy Reservoir would be minor by this point on the River Severn and thus would not introduce a pathway to impacting the WFD elements in this water body.
GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk	STT Severn Trent Option 143 (Cumulative RP3)	Compliant (med. conf.)	This assessment is driven by the Severn Trent WRMP option alone. It is expected that the increase in flows as a result of the STT support from Vyrnwy Reservoir would be minor by this point on the River Severn and thus would not introduce a pathway to impacting the WFD elements in this water body.
GB109054049145 - Severn - conf R Worfe to conf R Stour	STT Severn Trent Option 309Z (Cumulative RP4)	Compliant (high conf.)	
GB109054039760 - Severn - conf R Teme to conf R Avon	STT Severn Trent Option 66 (Cumulative RP5)	Compliant (low conf.)	This assessment is driven by the Severn Trent WRMP option alone. It is expected that the increase in flows as a result of the STT support from Vyrnwy Reservoir would be minor by this point on the River Severn and thus would not introduce a pathway to impacting the WFD elements in this water body.

GUC supported by Minworth SRO

A WFD compliance assessment has been undertaken of the Minworth SRO at Gate 2 following the All Companies Working Group methodology[28]. The Minworth SRO has assessed the WFD compliance of a Minworth effluent transfer of a range of sizes that slightly vary from the sizes identified in the regional plan. The assessment of a 115 Ml/d option is most similar to the additive initial 50 Ml/d and additional 50 Ml/d size of the GUC Transfer supported by Minworth SRO included in the draft Regional Plans. There is uncertainty in the Gate 2 SRO assessment over whether the 115 Ml/d option would be compliant in the River Tame water bodies and further flow modelling is advised to improve the data confidence for the hydrological regime in these water bodies. No WFD compliance issues were identified in either of the River Trent water bodies for any of the option sizes assessed. The full assessment can be found in the Gate 2 WFD Assessment Report for the Minworth SRO[29].

STT supported by ST Sources SRO

The STT will convey raw water from the River Severn into the River Thames via an interconnector. WRSE has assessed many variants of this and selected the 500 Ml/d pipeline option[30] as part of their adaptive plan. Not all available support options were selected in the WRSE reconciliation baseline scenario, but there are

[28] Mott MacDonald Limited (2020). All Companies Working Group WRMP environmental assessment guidance and applicability with SROs. Published October 2020
[29] AECOM (2022), Minworth Strategic Resource Option (SRO) Regulatory Environmental Assessments for Gate 2 Appendix I: Water Framework Directive Assessment
[30] The choice between conveying the water via pipeline or the existing canal network rests entirely with Water Resources South East.

plausible scenarios where they would be needed. The STT has also been subject to a Gate 2 WFD compliance assessment as part of the SRO gated process. The WFD compliance assessment found that the Full Severn to Thames Transfer scenario could lead to WFD non-compliance, but only in relation to the Minworth Transfer which is not included in the WRSE reconciliation baseline scenario. The full assessment can be found in the Gate 2 WFD Assessment Report for the Severn to Thames Transfer SRO[31].

NWT support options for WRW and STT

In addition, the North West transfer, which is one of the support elements of the STT transfer, is also selected to meet needs within Water Resources West. This is part of a joined-up adaptive plan, which uses 75 Ml/d of this water by Severn Trent in a low regrets way until it is needed by the South East. Severn Trent can develop other sources to be ready whenever the need in the South East arises. At that point this element of the North West transfer can switch over to Water Resources South East, via the Severn Thames Transfer. The full assessment can be found in the UUW dWRMP24 WFD assessment, which incorporates relevant aspects of the Gate 2 WFD Assessment Report for the NWT.

4.2 WFD Compliance Assessment of WRW's Draft Alternative Plan Pathway

The draft Regional Plan also considers a Water Resources South East- Water Resources West alternative pathway which assumes that there would be no development of a reservoir in the upper Thames Valley. This would involve a different combination of transfer options between Water Resources South East- Water Resources West which are presented in **Table 4-5**. The alternative pathway would result in additional impacts on WFD water bodies further than those assessed for the draft Best Value Plan in **Section 4.1**

Table 4-5 Water Resources South East- Water Resources West alternative pathway, assuming no new reservoir development in the upper Thames Valley.

Transfer option selection	Vol (Ml/d)	Operational date
GUC supported by Minworth WWTW effluent	50	2031
GUC supported by Minworth WWTW effluent (additional amount)	50	2040
STT supported by Netheridge (ST Sources SRO)	35	2040
STT supported by North West Transfer: Vyrnwy reservoir	25	2048
STT supported by North West Transfer: Vyrnwy (additional amount)	80	2050
STT supported by Minworth SRO	58	2050
STT supported by Minworth (additional amount)	57	2055

Along with the impacts set out in the draft Best Value Plan assessment, the alternative pathway would also require the Minworth support for STT leading to impacts on additional water bodies that are not impacted by the draft Best Value Plan or greater impacts on water bodies that are impacted by the draft Best Value Plan. **Table 4-6** present the WFD compliance summary of the impacted water bodies that are impacted in addition, or greater, to those impacted by the draft Best Value Plan. Further cumulative impacts as a result of the alternative pathway on the following water bodies have been identified also associated with impacts from options in the Severn Trent preferred plan:

- Option 31D: R Tame to R Dove WFD water body (GB104028047180). Though assessed as a cumulative impact without the alternative plan, the alternative plan would lead to further reduction in flows in the River Teme and River Trent that requires cumulative assessment with Option 31D. This impact is assessed as Cumulative RPAP1
- Option 420: Avon (Wark) conf R Leam to Tramway Br, Stratford (GB109054044402) assessed as Cumulative RPAP2

[31] Ricardo (2022), Severn Thames Transfer (STT) Solution, Water Framework Directive (WFD) Regulations Compliance Assessment Report, Report for: United Utilities on behalf of the STT Group

The summary of the cumulative assessments in these water bodies is presented in **Table 4-7** which is supported by the WFD screening and WFD impact assessments presented in **Appendix 2** and **Appendix 3** respectively.

As a result of the cumulative assessment between WRMPs and additional transfers sourced within the WRW region to support the alternative pathway, no further water bodies outside of those assessed in the individual SRO or WRMP assessments were found to be WFD non-compliant

Table 4-6 Overall WFD compliance of the water bodies impacted by the Water Resources South East- Water Resources West alternative pathway above those impacts of the WRW draft Best Value Plan alone.

River Basin District (and management catchment)	Water body	Option(s) impacting water body	WFD compliance summary	Assessment reported in
Humber (Trent Valley Staffordshire)	GB104028047180 - Trent - R Tame to R Dove	STT Minworth SRO Severn Trent Option 31D	Compliant (low conf.)	H (Cumulative RPAP1)
Severn (Avon Warwickshire)	GB109054043840 - Avon (Warks) - conf R Sowe to conf R Leam	STT	Potentially non-compliant (medium conf.)	D
	GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford	STT Severn Trent Option 31D	Potentially non-compliant (medium conf.)	H (Cumulative RPAP2)
	GB109054044401 - Avon- Tramway Br Stratford to Workman Br Evesham	STT	Potentially non-compliant (medium conf.)	D
	GB109054044403 - Avon conf Workman Br, Evesham to conf R Severn	STT	Potentially non-compliant (medium conf.)	D
	GB109054043840 - Avon (Warks) - conf R Sowe to conf R Leam	STT	Potentially non-compliant (medium conf.)	D
Severn (Severn Vale)	GB109054044404 - Severn - conf R Avon to conf Upper Parting	STT	Potentially non-compliant (medium conf.)	D
	GB109054044404 - Severn - conf R Avon to conf Upper Parting	STT	Compliant (low conf.)	D
	GB109054032750 - Severn (E Channel) - Horsebere Bk to Severn Est	STT	Compliant (low conf.)	D
Severn England TraC	GB530905415403 - Severn Upper	STT	Compliant (low conf.)	D

Table 4-7 WFD compliance of the additional water bodies impacted cumulatively by WRMP options and the additional transfers to support the Water Resources South East- Water Resources West alternative pathway.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028047180 - R Tame to R Dove WFD water body	Minworth SRO Severn to Thames Transfer SRO Seven Trent Water Option 31D (Cumulative RPAP1)	Compliant (low conf.)	Alone, the Minworth SRO found a 230 Ml/d sized Minworth scheme to be WFD compliant in this water body. This cumulative impact has assessed the combined reduction of flow associated with a 215 Ml/d Minworth Scheme and a 50 Ml/d reduction with Option 31D. with Option 31D being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are implemented to protect vulnerable river flows. Though the CAMS indicated that water is available for abstraction from this water body, there are significant morphology, sanitary water quality and nutrient pressures in this reach that must be considered when setting suitable license conditions for this new abstraction.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			With the Minworth support for Severn to Thames Transfer not required until 2050 and Option 31D not operational until 2060, this assessment can be updated in subsequent WRMPs and Regional Plans, considering information available from further research and an updated environmental baseline.
GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford	Severn to Thames Transfer SRO Seven Trent Water Option 420 (Cumulative RPAP2)	Potentially non-compliant (medium conf.)	This assessment is driven by inclusion of Minworth into the Severn to Thames Transfer option alone. It is expected that the reduction in flows as a result of Option 420 would be minor by this point on the River Avon and thus would not introduce a pathway to impacting the WFD elements in this water body. The impact on downstream water bodies is assessed in the Severn to Thames Transfer WFD compliance assessment.

Minworth SRO supporting GUC and STT

The GUC option supported by Minworth Transfer remains as that in the draft Regional Plan in **Section 4.1**.

The STT will convey raw water from the River Severn into the River Thames via an interconnector. WRSE has assessed many variants of this and selected the 500 Ml/d pipeline option[32] as part of their adaptive plan. For the WRSE alternative pathway (assuming no new reservoir development in the upper Thames Valley) which informs the alternative plan pathway of the draft WRW Regional Plan, but there are plausible scenarios where they would be needed a 115 Ml/d Minworth Transfer is also included as a support option. This amends the WFD compliance assessment of the STT from that in the draft Regional Plan in **Section 4.1**. The STT has been subject to a Gate 2 WFD compliance assessment as part of the SRO gated process. The WFD compliance assessment found that the Full Severn to Thames Transfer scenario could lead to WFD non-compliance in the River Avon water bodies identified above, along with the Severn - conf R Avon to conf Upper Parting water body, associated with the 115 Ml/d advanced treated effluent discharge from Minworth WwTW when the Minworth Transfer is needed to support the abstraction at Deerhurst. The full assessment can be found in the Gate 2 WFD Assessment Report for the Severn to Thames Transfer SRO[33].

The Minworth SRO has assessed the WFD compliance of a Minworth effluent transfer of a range of sizes that slightly vary from the sizes identified in the regional plan. The assessment of a 230 Ml/d option is most similar to the additive initial 50 Ml/d and additional 50 Ml/d size of the GUC Transfer supported by Minworth SRO; and the 115 Ml/d sized Minworth SRO support option for STT - included in the alternative plan pathway of the draft Regional Plan. This amends the WFD compliance assessment of the STT from that in the draft Regional Plan in **Section 4.1**. At Gate 2 the 230 Ml/d Minworth SRO has been assessed as likely not to be compliant in the Tame water bodies. No WFD compliance issues were identified in either of the River Trent water bodies for any of the option sizes assessed. The full assessment can be found in the Gate 2 WFD Assessment Report for the Minworth SRO[34].

NWT support options for WRW and STT

The WFD compliance assessment of the NWT support for WRW and then STT remains as the compliance assessment of the STT from that in the draft Regional Plan in **Section 4.1.**

[32] The choice between conveying the water via pipeline or the existing canal network rests entirely with Water Resources South East.
[33] Ricardo (2022), Severn Thames Transfer (STT) Solution, Water Framework Directive (WFD) Regulations Compliance Assessment Report, Report for: United Utilities on behalf of the STT Group
[34] AECOM (2022), Minworth Strategic Resource Option (SRO) Regulatory Environmental Assessments for Gate 2 Appendix I: Water Framework Directive Assessment

5. WFD compliance summary of the WRW draft Regional Plan

This report has set out the WFD compliance assessment for the WRW draft Regional Plan and alternative pathway.

Table 5-1 provides a summary of the WFD compliance of the WRW draft Regional Plan against the 3 core WFD Assessment Objectives (Objectives 1-3), the three progressive Assessment Objectives applicable to water bodies in England and Wales (Objectives 4-6) and the additional Assessment Objectives applicable to water bodies in Wales only (Objectives 7-11).

In each of the Severn Trent and United Utilities Water preferred programmes within their draft WRMP24 there are water bodies that have been assessed as having potentially WFD non-compliant impacts associated with options within the respective preferred plans. As noted in the component draft WRMPs the WFD compliance assessment is subject to review with either enhanced assessment or enhanced scheme design, including inclusion of suitable mitigation.

At the point of option development at Gate 2 in the RAPID gated process, there are also WFD compliance uncertainty with the Minworth Transfer for the GUC transfer associated with sourcing water from the WRW region, at the size of GUC included in the WRSE baseline reconciliation scenario. The STT, as included in the WRSE baseline reconciliation scenario, has been assessed at Gate 2 as WFD compliant. These SRO WFD assessments are not final and are subject to review as the design and assessment of the schemes progresses through the gated process.

The draft Regional Plan has numerous environmental destination options that have not been subject to WFD compliance assessment though are considered at the plan level. The Regional Plan services the environmental destination which is designed to provide environmental enhancement (including WFD) by reducing unsustainable abstraction and building resilience through more sustainable water resources options. With these being enhancement options, they would not cause WFD non-compliance in any water bodies. The environmental destination options perform a range of functions including, and not limited to, flood alleviation, habitat improvement, flow enhancement and water quality improvement. Each of these options have the potential to support many of the progressive WFD Assessment Objectives in both England and Wales.

Table 5-1 Summary of draft Regional Plan WFD compliance

WFD Assessment Objective	Summary of WFD compliance	Explanation
1) To prevent deterioration of any WFD element of any water body - in line with Regulation 13(2)a and 13(5)a	Potentially non-compliant	There are water bodies impacted by the activities within the Severn Trent draft WRMP24 preferred programme, United Utilities draft WRMP24 preferred programme and Minworth SRO that have been assessed as potentially non-compliant against this WFD Assessment Objective. Through further assessment and mitigation, it is possible that many, potentially all, of these impacts could be reduced to be WFD compliant.
2) To prevent the introduction of impediments to the attainment of 'Good' WFD status or potential for any water body -in line with Regulation 13(2)b and 13(5)c.	Potentially non-compliant	There are water bodies impacted by the activities within the Severn Trent draft WRMP24 preferred programme, United Utilities draft WRMP24 preferred programme and Minworth SRO that have been assessed as potentially non-compliant against this WFD Assessment Objective. Through further assessment and mitigation, it is possible that many, potentially all, of these impacts could be reduced to be WFD compliant.
3) To ensure that the planned programme of water body measures in RBMP2 to protect and enhance the status of water bodies are not compromised.	Compliant	None of the activities associated with WRW draft Regional Plan have been assessed as having the potential to compromise any planned programme of water body measures as set out in RBMP2.

WFD Assessment Objective	Summary of WFD compliance	Explanation
4) To assist the attainment of the WFD objectives for the water body – in line with Regulation 13(2)b and 13(2)c	May assist the attainment	Through the environmental destination measures in the draft Regional Plan, water quality, flow and habitat improvements may assist the attainment of Good Ecological Status or Good Ecological potential in multiple WFD water bodies.
5) To assist the attainment of the WFD objectives for associated WFD protected areas – in line with Regulation 13(6)	May assist the attainment	
6) To progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment	May assist the attainment	Many of the environmental destination options within the draft Regional Plan may assist to progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment.
7) To promote the sustainable use of water as a natural resource	May assist the attainment	Demand management activities and the capping of abstraction licenses at sustainable rates would assist to promote the sustainable use of water as a natural resource.
8) To conserve habitats and species that depend directly on water	May assist the attainment	Many of the environmental destination options within the draft Regional Plan may assist to conserve habitats and species that depend directly on water.
9) To progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment	May assist the attainment	Many of the environmental destination options within the draft Regional Plan may assist to progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment.
10) To progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants	May assist the attainment	Many of the environmental destination options within the draft Regional Plan may assist to progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants.
11) To contribute to mitigating the effects of floods and droughts	May assist the attainment	Many of the environmental destination options within the draft Regional Plan may contribute to mitigating the effects of floods and droughts.

The WRW draft Regional Plan's alternative pathway has been assessed to introduce further potentially WFD non-compliant impacts on the River Avon as a result of the Minworth WwTW discharge to the River Avon to support the STT and the associated reduction in Minworth WwTW discharge to the River Tame as a cumulative effect of the Minworth SRO support to both STT and GUC.

A1 Options included in the WRW draft Regional Plan

Options from Severn Trent's Preferred programme

The supply-side options included in Severn Trent's preferred programme for the draft WRMP24 and their operational dates are as follows:

- 29 Homesford WTW capacity increase 2030
- 33Z Shelton WTW Expansion 2030
- 66 Strensham WTW Expansion 2030
- 122A Draycote Reservoir WL increase (6%) 2030
- 128 Carsington to Tittesworth main (large) 2030
- 303C UU release from Vyrnwy (25 Ml/d) 2030
- 305 Heathy Lea to North Notts transfer 2030
- 426 Little Eaton WTW DO Recovery 2030
- 434 Trimpley WTW DO Recovery 2030
- 435 Whitacre WTW DO Recovery 2030
- 103 Mardy Support Link 2035
- 169 Terminate raw water export to Yorkshire Water 2035
- 301B UU import from Llanforda to Shelton (large) 2040
- 44 New R Sow abstraction and WTW near Stafford 2045
- 95B Ogston WTW Expansion 2045
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2050
- 22 Recommission Elmhurst GW source 2050
- 31C E. Midlands Raw Water Storage (CQ) 2050
- 58 River Weaver to New WTW at Stoke 2050
- 64 Rehabilitation Milton GW Source 2050
- 79A Wolves-Bham Strategic Link Main (large) 2050
- 84A Stanford Minor Dam Extension (84A) 2050
- 84B Lower Shustoke Minor Dam Extension (84B) 2050
- 84C Whitacre Minor Dam Extension (84C) 2050
- 105 Ruyton Support Link 2050
- 117 Peckforton Bulk Import from UU 2050
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050
- 128Z Carsington to Tittesworth main (small) 2050
- 143 W.Midlands Raw Water Storage 2050
- 190 Eyebrook Reservoir and new WTW's 2050
- 304 Ambergate to Mid-Notts transfer 2050
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050
- 406 New abstraction and WTW on River Trent 2050
- 423 Draycote WTW DO Recovery 2050
- 523 UU Mow Cop BH Treated water import 2050
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050
- 552 UU Bearstone treated water Import 2050
- 557 ASL Capacity Increase - Oldbury to Meriden 2050
- 134A Blackbrook reservoir to Cropston WTW 2057
- 420 Campion Hills WTW DO Recovery 2059
- 31D E. Midlands Raw Water Storage (CHQ) 2060
- 101 Kinsall Additional Resource (UU import) 2062
- 187C Expand Carsington Reservoir (25000 Ml) 2067

It is worth noting that the draft Regional Plan does not align completely with the Severn Trent draft preferred plan as the Severn Trent plan has replaced 303A UU release from Vyrnwy (75 Ml/d) with 303C UU release from Vyrnwy (25 Ml/d).

Options from UUW's Preferred programme

The supply-side options included in United Utilities Water preferred programme for the draft WRMP24 and their operational dates are as follows:

- WR015 SWN_RIVER IRWELL 2031
- WR111 GWE_WOODFORD 2031
- WR113 GWE_TYTHERINGTON 2031
- WR149 ITC_WIGAN 2031
- WR076 SWN_RIVER BOLLIN 2041
- WR049d SWN_RIVER RIBBLE 49d 2060
- WR107a2 GWE_AUGHTON PARK a2 2060

Options from DCWW's Preferred programme

Of the supply side options contained within the DCWW preferred plan, two options are within the SEWCUS zone:

- SEW166 SEWCUS network upgrade
- SEW168 LLWYNON_GRAVITY_MAIN_UPGRADES

Strategic Transfer Options

The following strategic transfer options are included in the WRSE-WRW updated baseline reconciliation position:

- GUC supported by 50Ml/d Minworth WWTW effluent (Minworth SRO) 2031
- GUC supported by 50Ml/d Minworth WWTW effluent (additional amount) (Minworth SRO) 2040
- STT 500Ml/d interconnector (STT) 2050
- STT supported by 35Ml/d Netheridge (ST Sources SRO) 2050
- STT supported by 135Ml/d North West Transfer (Vyrnwy reservoir) (NWT SRO) 2060

Gated Success programme

The Gated Success programme is one of these programmes and the supply-side options, and their operational dates, that are included this programme are as follows:

- 29 Homesford WTW capacity increase 2030
- 33Z Shelton WTW Expansion 2030
- 66 Strensham WTW Expansion 2030
- 122A Draycote Reservoir WL increase (6%) 2030
- 128 Carsington to Tittesworth main (large) 2030
- 303C UU release from Vyrnwy (25 Ml/d) 2030
- 305 Heathy Lea to North Notts transfer 2030
- 426 Little Eaton WTW DO Recovery 2030
- 434 Trimpley WTW DO Recovery 2030
- 435 Whitacre WTW DO Recovery 2030
- 103 Mardy Support Link 2035
- 301B UU import from Llanforda to Shelton (large) 2040
- 44 New R Sow abstraction and WTW near Stafford 2045
- 95B Ogston WTW Expansion 2045
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2050
- 22 Recommission Elmhurst GW source 2050
- 31C E. Midlands Raw Water Storage (CQ) 2050
- 58 River Weaver to New WTW at Stoke 2050
- 64 Rehabilitation Milton GW Source 2050
- 79A Wolves-Bham Strategic Link Main (large) 2050
- 84A Stanford Minor Dam Extension (84A) 2050

- 84B Lower Shustoke Minor Dam Extension (84B) 2050
- 84C Whitacre Minor Dam Extension (84C) 2050
- 105 Ruyton Support Link 2050
- 117 Peckforton Bulk Import from UU 2050
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050
- 128Z Carsington to Tittesworth main (small) 2050
- 143 W.Midlands Raw Water Storage 2050
- 190 Eyebrook Reservoir and new WTW's 2050
- 303A UU release from Vyrnwy (75 Ml/d) 2050
- 304 Ambergate to Mid-Notts transfer 2050
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050
- 406 New abstraction and WTW on River Trent 2050
- 423 Draycote WTW DO Recovery 2050
- 523 UU Mow Cop BH Treated water import 2050
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050
- 552 UU Bearstone treated water Import 2050
- 557 ASL Capacity Increase - Oldbury to Meriden 2050
- 134A Blackbrook reservoir to Cropston WTW 2057
- 420 Campion Hills WTW DO Recovery 2059
- 31D E. Midlands Raw Water Storage (CHQ) 2060
- 101 Kinsall Additional Resource (UU import) 2062
- 187C Expand Carsington Reservoir (25000 Ml) 2067

This programme is largely the same as the preferred programme though Option 169 has been removed and Option 303A has been added, to be operational in 2050-51. The operational dates for the options remain the same as those in the preferred plan.

A2 Screening of cumulative impacts between draft WRMPs and transfers

This appendix presents the results of the WFD compliance assessment screening outcomes for the cumulative impacts between the draft WRMPs and transfers within the draft Regional Plan and draft Regional Plan Alternative Pathway. Where a cumulative impact has been screened in for an impact assessment, the water bodies that were screened in have also been identified. The outcomes of the screening steps are displayed in **Table A-1**. The impact assessment for the options and water bodies scoped in for further assessment are presented in **Appendix 3**.

Table A-1 Screening of cumulative impacts between draft WRMPs and transfers

Cumulative reference	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Cumulative RP1	Trent - R Tame to R Dove	GB104028047180	River	Yes	Screening based on hydrological impact has identified that there would be a minor impact on the River Trent associated with these options being operated cumulatively. The HOF condition of 2,650 Ml/d at North Muskham will protect Q95 flows. In Q70 conditions there would be a flow reduction of 6% and the CAMS indicates that there is water available for abstraction in this catchment.
Cumulative RP2	Severn - conf Bele Bk to conf Sundorne Bk	GB109054049142	River	No	N/A
Cumulative RP3	Sundorne Bk to conf M Wenlock-Farley Bk	GB109054049141	River	No	N/A
Cumulative RP4	Severn - conf R Worfe to conf R Stour	GB109054049145	River	Yes	Option 309Z is a diversion of supply to the Shelton WRZ that would otherwise enter the Wolverhampton WRZ. The scheme as presented for the WRMP makes no change to the total water produced at Hampton Loade WTW therefore there will be minimal change to abstraction from the River Severn. As such, there are assumed to be negligible hydrological impacts which are assessed as WFD compliant. The STT option to release water from Vyrnwy Reservoir would only lead to a minor flow increase at this point in the River Severn. Therefore, this is not a pathway to impacting the WFD status elements in this water body.
Cumulative RP5	Severn - conf R Teme to conf R Avon	GB109054039760	River	No	N/A
Cumulative RPAP1	Trent - R Tame to R Dove	GB104028047180	River	No	N/A
Cumulative RPAP2	Avon (Wark) conf R Leam to Tramway Br, Stratford	GB109054044402	River	No	N/A

A3 WFD assessment of impacts between WRMPs and transfers

This appendix presents the WFD compliance assessment for the cumulative options that were screened in for more detailed assessment through the screening steps (as set out in **Appendix 2**). An impact assessment table has been completed for each water body for each cumulative impact that has been identified through the screening process.

Cumulative	RP2
Water body type	River
Hydromorph designation	No designation
Water body ID	GB109054049142
Water body name	Severn - conf Bele Bk to conf Sundorne Bk

Sources & pathways of potential effect:
This water body has been screened for further assessment based on the operational impacts. The increase in WTW efficiency may increase the abstraction from the Shelton abstraction on the River Severn. This would only be by a small amount, however, the CAMS assessment indicates that there is no water available for abstraction at Q95 conditions. There would also be an increase in flow at this point as a result of the additional releases from Vyrnwy Reservoir, though this increase would be minor by this point in the River Severn so is not expected to be a pathway to impacting any WFD elements in this water body.

	Baseline Status		**Reasons for not achieving good status**					**Assessment of cumulative impact**		
Status element	RBMP2 status (2015)	Draft RBMP3 Status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	Not assessed	Not assessed						Any geomorphological or habitat related changes associated with this slight flow decrease will not lead to WFD deterioration in the biological elements. Though there are water quality pressures in this water body, the flow change is so minimal that these will not increase the impact of these pressures significantly to cause deterioration in the biological status elements. It is unlikely that the small reduction in flow would impede the target of good status for macrophytes and phytobenthos, however, a more detailed assessment is likely required to confirm this.	Compliant (high conf.)	n/a
Invertebrates	High	High							Compliant (high conf.)	n/a
Macrophytes/ phytobenthos					Probable				Compliant (high conf.)	Compliant (med. conf.)
Phys-chem water quality (in support of ecological status)					Moderate for phosphate due to continuous sewage discharge and poor livestock management.			The small reduction in flow associated with the operation of Option 31D will not lead to deterioration in phys-chem water quality status.	Compliant (high conf.)	Compliant (med. conf.)
Chemicals			Fail for PFOS, PBDE and Mercury					It is unlikely that there would be any impacts on chemical water quality in this water body	Compliant (high conf.)	Compliant (high conf.)
RBMP2 water body measures			None					No RBMP2 water body measures associated with this water body.	n/a	Compliant (high conf.)

Overall assessment of WFD Regulations compliance of the cumulative impact in this water body	Compliant (med. conf.)

Cumulative	RP3
Water body type	River
Hydromorph designation	Not designated artificial or heavily modified
Water body ID	GB109054049141
Water body name	Severn - Sundorne Bk to conf M Wenlock-Farley Bk

Sources & pathways of potential effect:
This water body has been screened in for further assessment based on operational activities. Option 143 would lead to additional abstraction from the River Severn (100Ml/d) from a new abstraction point in this water body under high flow conditions. Further, when required (usually under low flow conditions), Option 143 will discharge into the River Severn (50Ml/d) in order to support abstractions. As a result, this Option 143 will lead to changes in the flow velocities, level and marginal habitats in this water body. The STT discharge from the River Vyrnwy will increase flows at this point in the River Severn, though this increase would be minor and would not lead to a pathway to impact the elements in this water

	Baseline Status		**Reasons for not achieving good status**					**Assessment of cumulative impact**		
Status element	RBMP2 status (2015)	Draft RBMP3 Status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	Not Assessed	Not Assessed						It is assumed that a hands-off flow condition will be set in the abstraction license that will ensure that the aquatic environment is protected. As such, there is not expected to be deterioration or impediments to Good status for the biological status element associated with this scheme. The increase in flows at this point in the River Severn is a small proportion compared to the baseline flows. It is unlikely that this increase would lead to significant changes in the aquatic habitat so would not lead to deterioration in the biological status elements.	Compliant (med. conf.)	Compliant (med. conf.)
Invertebrates		High							Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos						Confirmed	Organic pollution-intermittent sewage discharge (confirmed)		Compliant (med. conf.)	Compliant (med. conf.)
Phys-chem water quality (in support of ecological status)					Phosphate - moderate (2015), Poor (2019). Poor livestock and nutrient management (probable), continuous and intermittent sewage discharge			Abstraction will only occur under high flow conditions, therefore, water quality will not differ from the range currently experienced in this water body. An increase in flow in the water body may dilute these water quality pressures, potentially resulting in a water quality improvement in this water body.	Compliant (med. conf.)	Compliant (med. conf.)
Chemicals			Fail for PBDE and Mercury					There would not be deterioration in chemical status in this water body	Compliant (med. conf.)	Compliant (med. conf.)
RBMP2 water body measures	**None**							No RBMP2 water body measures associated with this water body.	n/a	Compliant (high conf.)
								Overall assessment of WFD Regulations compliance of the cumulative impact in this water body	Compliant (med. conf.)	

Cumulative	RP5
Water body type	River
Hydromorph designation	Heavily Modified
Water body ID	GB109054039760
Water body name	Severn - conf R Teme to conf R Avon

Sources & pathways of potential effect:
This water body has been screened in for further assessment based on operational activities. The new 30Ml/d intake on the River Severn would only result in a 2% reduction in Q95 flows. The CAMS for the area indicates that no water is available for abstraction at Q95 flow, restricted water is available for abstraction at Q70 flows and water is available for abstraction above Q50 flows. The small amount of flow change is unlikely to have significant impacts on in-channel habitat. There may be a reduction in buffering capacity of water quality pressures. The STT discharge from the River Vyrnwy will increase flows at this point in the River Severn, though this increase would be minor and would not lead to a pathway to impact the elements in this water body.

	Baseline Status		**Reasons for not achieving good status**					**Assessment of cumulative impact**		
Status element	RBMP2 status (2015)	Draft RBMP3 Status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	Not Assessed	Not Assessed						A 2% reduction in river flows is likely insufficient to impact the aquatic environment. Flows in the River Severn are protected by the HOF at Deerhurst (2568 Ml/d) and water is available for abstraction in excess of that required for this option. With the hands-off flow conditions set at appropriate levels to safeguard the aquatic environment, there should be no material adverse effects of the biological status elements. Overall it is unlikely that deterioration between status classes for fish, macro-invertebrates or macrophytes and phytobenthos will occur.	Compliant (med. conf.)	n/a
Invertebrates									Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos						Probable			Compliant (med. conf.)	n/a
Phys-chem water quality (in support of ecological status)					2015 moderate for phosphate. 2019 poor for phosphate. Dissolved oxygen has dropped from high in 2015 to good in 2019.			A reduction in flow could potentially exacerbate the point source phosphate pressures in this reach. This will have to be considered when setting the license conditions for this abstraction. With the assumption that this is thoroughly considered, there is no risk of deterioration in phys-chem water quality.	Compliant (med. conf.)	Compliant (low conf.)
Chemicals			Fail for PBDE, PFOS and Mercury					It is not expected that the cumulative impact of these options would lead to deterioration in the chemical water quality of this water body.	Compliant (med. conf.)	Compliant (med. conf.)
RBMP2 water body measures	**None**							No RBMP2 water body measures associated with this water body.	n/a	Compliant (med. conf.)

Overall assessment of WFD Regulations compliance of the cumulative impact in this water body	Compliant (low conf.)

Cumulative	RPAP1
Water body type	River
Hydromorph designation	Not designated artificial or heavily modified
Water body ID	GB104028047180
Water body name	Trent - R Tame to R Dove

Sources & pathways of potential effect:
This water body has been screened for further assessment based on the operational impacts. The reduction on flow as a result of the Minworth Reuse and Option 31D would lead to reductions in Q70 flows by ~11%. Reductions in flow would be linked with changes in velocities, level and maginal habitats.

	Baseline Status		Reasons for not achieving good status					Assessment of cumulative impact		
Status element	RBMP2 status (2015)	Draft RBMP3 Status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish				Probable	Confirmed			The CAMS indicates that there is water available for abstraction in this water body therefore there is no flow pressure in this water body. As a result, this reduction in river flow in this water body is unlikely to significantly impact the diversity, connectivity and usable area of fish habitat in channel. Potential for water quality reductions, from reduction in buffering capacity for both continuous and intermittent water quality pressures known in this water body. With Option 31D being a new river abstraction it is expected that suitable license conditions would be set within the abstraction license to avoid any WFD compliance risks.	Compliant (low conf.)	Compliant (low conf.)
Invertebrates						Confirmed	Organic pollution-poor livestock management (prob.)		Compliant (low conf.)	Compliant (low conf.)
Macrophytes/ phytobenthos						Confirmed			Compliant (low conf.)	Compliant (low conf.)
Phys-chem water quality (in support of ecological status)			Poor for phosphate (2015 & 2019) associated with urbanisation (prob.), poor livestock management (prob.), continuous and intermittent sewage discharge (both confirmed).					A reduction in river flows may reduce the buffering capacity against the other quality pressures in this water body. With Option 31D being a new river abstraction it is expected that suitable license conditions would be set within the abstraction license to avoid any WFD compliance risks.	Compliant (low conf.)	Compliant (low conf.)
Chemicals			Fail for PBDE, PFOS and mercury (2019)					It is unlikely that there would be deterioration in chemical status in this water body.	Compliant (low conf.)	Compliant (low conf.)
RBMP2 water body measures			**none**					No RBMP2 water body measures associated with this water body.	n/a	Compliant (high conf.)
								Overall assessment of WFD Regulations compliance of the cumulative impact in this water body	Compliant (low conf.)	

Cumulative	RPAP2
Water body type	River
Hydromorph designation	Not designated artificial or heavily modified
Water body ID	GB109054044402
Water body name	Avon (Wark) conf R Leam to Tramway Br, Stratford

Sources & pathways of potential effect:
This water body has been screened for further assessment based on the operational impacts. The Minworth discharge into the water body upstream of this water body would have continued impacts in this water body. The increases in flow would be linked with changes in velocities, level and marginal habitats. There would also be the introductions of chemicals to the water body. Option 420 would only lead to a small decrease in flow in this water body which would not introduce a pathway to impact any of the WFD elements in this water body.

	Baseline Status		**Reasons for not achieving good status**					**Assessment of cumulative impact**		
Status element	RBMP2 status (2015)	Draft RBMP3 Status	Flow	Morphology	Sanitary water quality	Nutrients	Other	Assessment	Potential for deterioration	Potential for introduction of impediments
Fish	Not assessed	Not assessed						The WFD compliance assessment for the Severn to Thames Transfer Gate 2 identified that there would be no deterioration in any of the biological status elements in this water body.	Compliant (low conf.)	n/a
Invertebrates									Compliant (med. conf.)	n/a
Macrophytes/ phytobenthos						Probable			Compliant (med. conf.)	Compliant (med. conf.)
Phys-chem water quality (in support of ecological status)			Poor for phosphate (2015 & 2019) as a result of continuous sewage discharge (prob.) and urbanisation (prob.)					The WFD compliance assessment for the Severn to Thames Transfer Gate 2 identified that there could be the potential for deterioration in dissolved oxygen status in this water body as a result of the Minworth WwTW discharge into this water body.	Non-compliant (med. conf.)	Compliant (med. conf.)
Chemicals			Fail for PBDE, PFOS and mercury (2019)					The WFD compliance assessment for the Severn to Thames Transfer Gate 2 identified impediment to Good PFOS, Cypermethrin and Permethrin status.	Compliant (med. conf.)	Non-compliant (med.
RBMP2 water body measures			**none**					No RBMP2 water body measures associated with this water body.	n/a	Compliant (high conf.)
								Overall assessment of WFD Regulations compliance of the cumulative impact in this water body	Non-compliant (med. conf.)	

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