WATER FRAMEWORK DIRECTIVE REGULATIONS COMPLIANCE ASSESSMENT

Draft Water Resources Management Plan 2024

Severn Trent Water

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Upper Derwent Valley, Severn Trent

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EXECUTIVE SUMMARY

This report outlines the WFD Regulations Compliance Assessment that has been completed to support Severn Trent's Draft Resources Management Plan 2024 (WRMP24).

Through an extensive optioneering process, considering a wide range of potential options to balance future supply and demand, Severn Trent has selected the most suitable options to make up the feasible options list. This list includes both demand side and supply side options, of which only the latter require a Water Framework Directive (WFD) Compliance Assessment.

The 81 supply side options that make up part of the feasible options list have been subject to WFD Compliance Assessment against the three core WFD Assessment Objectives:

1. To prevent deterioration of any WFD element of any water 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 water body in line with Regulation 13(2)(b) and 13(5)(c).
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.

In determining the draft WRMP24 preferred plan of options, Severn Trent used the findings of the option-level assessments to inform the programme appraisal process. Severn Trent has set out six candidate programmes, each of which have been assessed to understand their WFD compliance. The programmes that have been set out as part of the draft WRMP24 are as follows:

- Preferred Programme
- Least Cost Programme (*the same as the preferred programme*)
- Ofwat Core Programme
- Environmental Stretch
- Climate Adjustment
- Gated Success

A WFD compliance assessment has been conducted to determine the compliance of each of these plans which has assessed each of these plans against the core WFD Assessment Objectives (set out above) and eight progressive WFD Assessment Objectives. The progressive WFD Assessment Objectives can be used to inform decision making. The supply-side options included in Severn Trent's preferred programme for the draft WRMP24 and their operation dates are as follows:

29	Homesford WTW capacity increase	2030-31
33Z	Shelton WTW Expansion	2030-31
66	Strensham WTW Expansion	2030-31
122A	Draycote Reservoir WL increase (6%)	2030-31
128	Carsington to Tittesworth main (large)	2030-31
303C	UU release from Vyrnwy (25 Ml/d)	2030-31
305	Heathy Lea to North Notts transfer	2030-31
426	Little Eaton WTW DO Recovery	2030-31
434	Trimpley WTW DO Recovery	2030-31
435	Whitacre WTW DO Recovery	2030-31
103	Mardy Support Link	2035-36
169	Terminate raw water export to Yorkshire Water	2035-36
301B	UU import from Llanforda to Shelton (large)	2040-41
44	New R Sow abstraction and WTW near Stafford	2045-46
95B	Ogston WTW Expansion	2045-46
6	Upper Derwent Valley Reservoir Expansion (UDVRE)	2050-51

- 22 Recommission Elmhurst GW source 2050-51
- 31C E. Midlands Raw Water Storage (CQ) 2050-51
- 58 River Weaver to New WTW at Stoke 2050-51
- 64 Rehabilitation Milton GW Source 2050-51
- 79A Wolves-Bham Strategic Link Main (large) 2050-51
- 84A Stanford Minor Dam Extension (84A) 2050-51
- 84B Lower Shustoke Minor Dam Extension (84B) 2050-51
- 84C Whitacre Minor Dam Extension (84C) 2050-51
- 105 Ruyton Support Link 2050-51
- 117 Peckforton Bulk Import from UU 2050-51
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050-51
- 128Z Carsington to Tittesworth main (small) 2050-51
- 143 W.Midlands Raw Water Storage 2050-51
- 190 Third party reservoir purchase and new WTW's 2050-51
- 304 Ambergate to Mid-Notts transfer 2050-51
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050-51
- 406 New abstraction and WTW on River Trent 2050-51
- 423 Draycote WTW DO Recovery 2050-51
- 523 UU Mow Cop BH Treated water import 2050-51
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050-51
- 552 UU Bearstone treated water Import 2050-51
- 557 ASL Capacity Increase - Oldbury to Meriden 2050-51
- 134A Blackbrook reservoir to Cropston WTW 2057-58
- 420 Campion Hills WTW DO Recovery 2059-60
- 31D E. Midlands Raw Water Storage (CHQ) 2060-61
- 101 Kinsall Additional Resource (UU import) 2062-63
- 187C Expand Carsington Reservoir (25000 Ml) 2067-68

Of the water bodies impacted by the preferred programme options, four water bodies have been identified as having potentially WFD non-compliant impacts associated with the options above, however, these would not be impacted until 2050-51. Further investigations are advocated into these potential impacts which should be undertaken in order to improve the confidence in these assessments in subsequent WRMPs. None of the impacts on the water bodies associated with the preferred programme options have been confirmed as being definitely WFD non-compliance and each could potentially be found compliant through further investigations and operational refinement of the options that impact them.

Six water bodies have uncertain WFD compliance risks associated with options within the preferred programme. Of these, two are on the River Derwent and the uncertainty is driven mostly by the change in flow regime on the River Derwent associated with the expansion of the Derwent Valley Reservoirs (Option 6) which is undergoing further investigation through the Upper Derwent Valley Reservoir Expansion (UDVRE) Strategic Resources Option (SRO) assessment as part of the RAPID Gated process. With the operation of this option set for 2050-51, future iterations of the WRMP can make more confident conclusions of the WFD compliance on these water bodies based on the UDVRE SRO environmental assessments. The other water bodies where uncertain impacts have been identified are also associated with options set to be operational at the same time as the UDVRE option and assessments for these can also be updated in future WRMPs based on the suggested investigations.

The preferred programme would not assist with any of the progressive WFD Assessment Objectives except for Assessment Objective 7 (*To promote the sustainable use of water as a natural resource*) which would be assisted through demand management options promoting the sustainable use of water.

1. INTRODUCTION

This section sets out the background and purpose of this report (**Section 1.1**), explains the Water Framework Directive (**Section 1.2**) and its context in Water Resource Management Plans (**Section 1.3**).

1.1 BACKGROUND AND PURPOSE OF REPORT

Water companies in England and Wales have a statutory requirement to prepare a Water Resources Management Plan (WRMP) every five years. The latest Water Resource Planning Guideline (WRPG) produced by the regulatory bodies[1] (Ofwat, The Environment Agency and Natural Resources Wales) advises that it is the water companies' requirement to have regard to River Basin Management Plans (RBMPs) and Water Framework Directive regulations in their WRMPs. This report is driven by this requirement and will demonstrate how Severn Trent have met this requirement in the assessment of their draft WRMP 2024 (WRMP24) feasible options and preferred plan.

1.2 THE WATER FRAMEWORK DIRECTIVE

The Water Framework Directive[2] 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.

1.3 WFD REQUIREMENTS FOR WRMPS

The purpose of a WRMP is to set out how a water company will achieve a secure supply of water for its customers whilst protecting the environment and demonstrating resilience against a range of future challenges such as more extreme droughts, climate change and population growth.

As part of the WRMP, water companies must demonstrate that they have considered the WFD regulations. The requirements for a WFD assessment of a water company WRMP are outlined in the 2021 WRPG (**Box 1**).

Box 1: WRPG 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."

[1] Ofwat, NRW & EA (2021), Water Resources Planning Guideline – Updated 17 March 2021
[2] European Union (2000) Directive 2000/60/EC of the European Parliament and of the Council

These WRPG requirements reflect Defra's Guiding Principles for Water Resources Planning[3] (May 2016) which state that companies should take account of the government's objectives for the environment "including the appropriate parts of the EU Water Framework Directive". Defra also expects that companies will:

- Have regard to River Basin Management Plans (RBMPs) and their objectives when making decisions that could affect the condition of the water environment
- Ensure that **current** abstractions and operations, as well as future plans, support the achievement of environmental objectives and measures set out in RBMPs.
- Ensure plans:
  - prevent deterioration in water body status;
  - support the achievement of protected area and species objectives;
  - support the achievement of water body status objectives.
- Continue working with the Environment Agency to take a proportionate and evidence based approach to identify the changes needed to current abstraction licences to meet environmental requirements.

Both WRPG and the Defra Guiding Principles refer to ensuring 'no deterioration' of water body status. European Court of Justice (ECJ) ruling[4] 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[5] 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 and Natural Capital/Environmental Resilience assessments which will be undertaken in parallel to the WFD assessment.

[3] Defra (2016) Guiding Principles for Water Resources Planning. May 2016.

[4] 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]

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

2. WFD COMPLIANCE ASSESSMENT METHODOLOGY

The purpose of this section is to set out the approach used when assessing the WFD compliance of the feasible options and preferred programme (along with alternative programmes) of Severn Trent's draft WRMP24. **Section 2.1** identifies the WFD Assessment Objectives used throughout the WRMP process. **Section 2.2** describes the proportionate level of detail for the assessments.

The assessment approach presented here has been applied to the feasible list of options, preferred programme and alternative programmes. All schemes have been through a form of high-level WFD screening prior to being included in the feasible list of options. As a result, all options included within the feasible list are without unalterable WFD constraints.

All assessments will be undertaken for the reporting unit of a WFD water body. The appropriate baseline information for water bodies status and targets is as set out using 2021 WFD status as published in the third cycle of RBMPs (RBMP3). It is worth noting that the 3rd cycle of RBMP3 is expected to be published later in 2022, however, it is our current understanding[6] that the RBMP3 status, when published, will match the 2019 interim status as currently published. In the absence of the RBMP3 water body status, assessments have been undertaken against the RBMP2 status.

2.1 WFD ASSESSMENT OBJECTIVES FOR TESTING COMPLIANCE

This section provides the WFD Assessment Objectives used as a test of constraint when testing WFD compliance at an individual potential option-level (**Section** Error! Reference source not found.) as set out in WRPG (2021)[7]. This section also provides the additional, progressive WFD Assessment Objectives that have been assessed at a plan-level (**Section** Error! Reference source not found.).

2.1.1 Option-level WFD Assessment Objectives

Principally, the WFD acts as an indicator of constraint and determines where the draft WRMP or options within do not meet WFD Objectives set out in Regulation 13 of the WFD Regulations. In line with WRPG (2021) and UKWIR (2021) guidance the principle WFD Assessment Objectives that the draft WRMP (both feasible options and programmes) has been tested against are:

1. To prevent deterioration[8] 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)[9].
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.

If an option has been assessed to definitively not comply with the WFD Assessment Objectives set out above then the option has been reported as WFD non-compliant and removed from the WRMP process. This only applies to options for which a clear and obvious conclusion around non-compliance can be reached, and for which no mitigation to provide compliance is possible.

If an option is assessed to potentially not comply with the WFD Assessment Objectives set out above then the option has been reported as potentially WFD non-compliant. If an option is reported as potentially WFD non-compliant it has remained in the WRMP process as it may be appropriate to consider the option further where it is considered that additional evidence to improve confidence in the assessment and/or enhanced design could mitigate the potentially WFD non-compliant issues. It is at the discretion of Severn Trent as to whether

[6] As identified to Ricardo by Environment Agency NAU lead for Severn to Thames Transfer SRO (Alison Williams) at WFD assessment approach meeting, 13 December 2021

[7] Specifically set out in WRPG 2021 (updated 17 March 2021) at Section 8.2.2

[8] As defined in **Section 1.3**

[9] 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 operation of river basin management plans position. LIT 14339. 01/2021

a potentially WFD non-compliant option continues to progress through the WRMP process; however, if a potentially WFD non-compliant option is progressed it will need to be discussed and agreed by the water company with the relevant regulatory body.

2.1.2 Plan-level WFD Assessment Objectives

The WFD Assessment Objectives in **Section** Error! Reference source not found. are the fundamental WFD Assessment Objectives that have been tested against at **both** the option-level and plan-level.

There are a number of further WFD Assessment Objectives, set out in the WRPG, which have been tested against at a plan-level. These further tests have only been applied to a Plan containing options which pass WFD Assessment Objectives 1-3. 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)
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[10].

Furthermore, with reference to plans in Wales additional WFD Assessment Objectives have been identified as appropriate from OGN72[11]. 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.

A negative answer to the WFD Assessment Objectives above does not determine that the plan has WFD constraints; however, they can inform decision making by the water company.

Where WFD Assessment Objectives 1, 2 and/or 3 are not met by a programme or plan then, unless there is no reasonable alternative, that plan has not been progressed as the preferred plan without discussion with the relevant regulatory body. Discussion with the regulatory body includes:

- If a plan is reported as potentially WFD non-compliant it may be appropriate to consider an adaptive plan where it is considered that additional evidence to improve confidence in assessment and enhanced design could mitigate the potentially WFD non-compliant issues.
- Where a plan is assessed as WFD non-compliant, in circumstances where there is an over-riding public interest or the benefits of achieving the WFD Assessment Objectives are outweighed by benefits to human health, human safety or sustainable development there is scope to apply for a Regulation 19 exemption as to why these WFD Assessment Objectives are not achieved.

2.2 PROPORTIONATE LEVEL OF DETAIL FOR ASSESSMENTS

Throughout the WRMP process WFD compliance has been tested at relevant stages parallel to the wider WRMP programme. The approach taken to test WFD compliance for feasible options and consequent programmes of options is as follows:

1) Option-level Assessment – As set out in **Section 2.2.1**, this is a full assessment that covers the feasible list of options.
2) Programme level assessment – As set out in **Section 2.2.2**, the cumulative effects of the options that make up any programmes have been assessed.

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

3) Preferred WRMP programme assessment – As set out in **Section 2.2.3**, the preferred draft WRMP programme for Severn Trent has been assessed for impacts with other water companies draft WRMPs and regional plans.

In order to ensure the WFD assessment is proportionate for each stage an outline of the assessment for each stage is provided in this section.

2.2.1 Stage 1 Option-level Assessment

Stage 1 is where there is scope for the most detailed assessments. As advocated in the UKWIR (2021) guidance, each option has gone through a process to determine if it is compliant with the three principle WFD Assessment Objectives (as set out in **Section 2.1**). For proportionality of option assessment there are 4 steps with each step becoming increasingly detailed. Where there is sufficient confidence in an assessment's conclusions the option has not progress onto the next step. The four steps are as follows:

- Step 1 Screening based on activities - to either exclude options from further assessment where it could be reasonably expected that the option would not have an influence on any WFD status elements or supporting elements, or identify which activities require progressing to Steps 2 or 3 assessment and in which water bodies (**Section 2.2.1.1**).
- Step 2 Screening based on magnitude of hydrogeological/hydrological impact and water body context- to either exclude options from assessment where they are negligible or low impact, or identify which activities require progressing to Step 3 assessment and in which water bodies (**Section 2.2.1.2**).
- Step 3 Impact assessment – either using existing assessments or an expert judgement approach based on source-pathway-receptor to establish likelihood of compliance with agreed WFD Assessment Objectives in all relevant water bodies. A confidence rating has been given to all assessments to reflect the amount of uncertainty in the design, environmental baseline and magnitude of impact (**Section 2.2.1.3**).
- Step 4 Detailed impact assessment - specific to the option using measured baseline data, including additional bespoke collected evidence, and detail on design and operating pattern. None of the options in this draft WRMP have been subject to this level assessment. This level of assessment is not normally proportionate at a WRMP level.

Further detail on how these steps have been assessed is set out below for the option-level assessment.

2.2.1.1 Step 1: Screening based on activities

All options in the feasible list have been subject to this step. Where an option is screened as WFD compliant at this stage it has been accompanied by a robust explanation as to why this assessment can be made without the need to progress the option to Step 2. Instances where there is considered no risk to WFD compliance are identified as:

- Demand management activities;
- Supply options which have passed a sustainability assessment[12] at an abstraction rate up to the proposed option rate;
- Network constraint (i.e. improving infrastructure to achieve greater deployable output) options that do not result in additional abstraction (in comparison to recent abstraction rates), or where that additional abstraction has been identified as sustainable[13]; provided the construction does not affect WFD protected areas or increase the risk of the transfer of INNS.

At this stage, the majority of construction activities can be screened out of further assessment with these activities being mitigatable assuming best practice construction techniques and only being short-term impacts (i.e. will not cause deterioration over the 6-year RBMP cycle).

Where an option is concluded as potentially not compliant with the WFD Assessment Objectives after Step 1 screening, the option has been progressed to Step 2 screening.

[12] e.g. Surface water options WRGIS Band 1, 2 and 3 pass at fully licensed; groundwater options passing WFD groundwater tests; WINEP investigation are identified as sustainable by EA (UKWIR, 2021).
[13] *ibid*

2.2.1.2 Step 2: Screening based on magnitude of hydrogeological/hydrological impact and water body context

Step 2 screening identifies the water body name, ID and type of any water bodies that could potentially be impacted. The potential impacts are determined by the type of option. The UKWIR (2021) guidance identifies a range of option types and their potential impacts (**Table 2-1**).

Table 2-1 Potential effects to screen in to WFD assessment by option type

Option type	Impact type to test
New groundwater abstraction, increase in license rate	• Change in groundwater quantity • Impact on groundwater dependent terrestrial ecosystems • Impact on connected surface waters (flow change effects on ecology and water quality dilution) • Likelihood of saline ingress into aquifer
Aquifer recharge/ aquifer storage and recovery	• Effects specific to source water used for recharge
Reservoir	• Impact on connected surface waters (flow change effects on ecology and water quality dilution)
Run-of river abstraction	• Flow change effects on ecology and water quality dilution
River regulation	• Flow change effects on ecology and water quality dilution in regulated reach
Reuse	• Flow and water quality change effects on ecology and chemical status in receiving watercourse • Flow and water quality change effects on ecology and chemical status in water course previously receiving discharge
Desalination	• Hydrodynamic changes on ecology in abstracted water body, including through pathways of salinity and sedimentation pattern change
Inter-basin transfer	• Flow change effects on ecology and water quality dilution in donor watercourse • Direct ecological effects from introduction of invasive non-native species • Flow and water quality change effects on ecology and chemical status in receiving watercourse

At this stage the context of the water body will be considered to identify any additional constraints i.e. any protected areas, any planned water body measures in RBMP2.

For any options that are sourced from groundwater a hydrogeologist has determined any local surface water bodies that are hydraulically connected. The impact on both the groundwater water body and the surface water bodies has been assessed. Similarly, any links between lake water bodies and river water bodies have been taken into consideration when assessing options that impact lake water bodies.

Impacts are not confined to the water body where the option is located as the impacts of an option can transverse multiple water bodies. In these instances, assessments have been conducted against each water body in the flow pathway until no WFD compliance risk is identified.

In England & Wales, hydrology is a supporting element to WFD status and is not a status element that contributes directly to WFD ecological status. Regulators' hydrogeological/hydrological assessment tools and their outputs can provide suitable information from which to assess the magnitude of effect. Hydrogeological/hydrological appraisal tasks that have been undertaken are:

- Review the regulatory position[14] on water available for abstraction in an aquifer, reach or catchment, based on modelling tools. The available quantity can be compared with the increase in abstraction associated with an option. These assessments often include an indication of water availability under different flow conditions which adds specificity to potential operational considerations such as hands-off flow conditions.

[14] Environment Agency Abstraction Licensing Strategy datasets:
https://data.gov.uk/dataset/b1f5c467-ed41-4e8f-89d7-f79a76645fd6/water-resource-availability-and-abstraction-reliability-cycle-2 (April 2021)
https://data.gov.uk/dataset/54181453-b5bd-4694-96b2-a1b5d40985b5/groundwater-management-units-coloured-according-to-water-resource-availability-colours (September 2020)

- Review the regulatory position on WFD hydrology, including the pass forward flow from rivers to transitional waters[15].
- Review the regulatory position on the extent of influence of flow on status elements failing their targets, including biological status elements, physico-chemical status elements, hydro-morphology and groundwater quantitative status[16].
- For surface waters, review the likely changed river flow regime against measured river flows from nearby gauging stations long-term records held on the National River Flow Archive[17] to inform the magnitude of change in flow.

Where the hydrogeological/hydrological appraisal identifies operational activities that are considered with confidence to be low impact these will be concluded as WFD compliant, subject to review of local WFD protected areas.

2.2.1.3 Step 3: Impact assessment

Where a WFD assessment has not identified an option as WFD compliant through the screening processes of Step 1 and Step 2 the option has been subject to impact assessment.

For each option the construction and operational activities which have been screened in to Step 3 impact assessment are identified. A source-pathway-receptor approach to identifying effects on WFD Assessment Objectives has been undertaken. Using that approach, the source of change is the construction or operational activity. The pathway includes physical environment changes such as water level change, flow velocity change, morphological change. The receptor is the WFD status element or the WFD protected area.

For a proportionate assessment, WFD status elements have been screened for those at risk of change from water resource plan options. These have been used as the basis of the assessment for deterioration and target impediment WFD Assessment Objectives, with other elements included on a case-by-case basis. Where the pathway of option impact is physical environment changes only (e.g. not to water quality), the sensitive biological status elements (to flow and morphology) are as follows:

- River water bodies: macrophytes, invertebrates, fish
- Lake water bodies: macrophytes
- Transitional water bodies: fish, benthic invertebrate (extent), sea grass (extent)
- Coastal water bodies: benthic invertebrate (extent), sea grass (extent).

Further pathways are dependent on local conditions and local environmental quality pressures such as changes in dilution of point or diffuse pollution pressures, changes in fish passability at structures. Under these circumstances the assessment also considers WFD compliance impacts to physico-chemical water quality, particularly sanitary and nutrient quality which are the main supporting water quality elements to ecological quality, as well as the associated biological status elements to nutrient and water quality pressures. In exceptional circumstances, where there are known discharges of specific pollutants or substances regulated through WFD chemical status, the dilution change of these has been included in the assessment.

Water quality changes are often associated with river flow reductions as a result of the change of dilution of water quality pressures. Existing known pressures are listed by the Environment Agency/Natural Resources Wales' Reasons for Not Achieving Good (RNAG) datasets and these are reviewed for their level of influence.

The impact assessments have been undertaken using expert judgement by a hydroecologist, working with any other appropriate disciplines required, which is considered to be the most appropriate Step 3 impact assessment, utilising a level of confidence indicator.

For groundwater bodies, a hydrogeologist has advised on the outcome of the four quantitative tests and the relevant linked surface water bodies, as well as any of the qualitative tests screened into the assessment. These assessments utilise existing reports or modelling (including regulators regional groundwater models) where readily available or, failing that, expert judgement (noting that no additional modelling has been conducted at this step).

[15] In England this is reported by the EA through the RNAG assessment (Reasons for Not Achieving Good status/potential)
[16] *ibid*
[17] https://nrfa.ceh.ac.uk/data/search

A confidence rating has been assigned to all assessments to reflect the amount of uncertainty in the option design, environmental baseline and magnitude of impact. The confidence level categories that have been used are presented in **Table 2-2**.

Table 2-2 WFD compliance assessment confidence level categories

Confidence category	Description
Low	Known WFD compliance risks/ failures and potential pathways from option's activities - where assessment based on expert judgement alone
Medium	Reasonable levels of evidence for at risk activities. Some assumptions and expert opinion required around risk areas.
High	Good level of evidence with minimal assumptions; or low risk activity

2.2.2 Stage 2: Programme level assessment

In order to support programme development, the potential for cumulative effects of different combinations of constrained options has been highlighted. The programme level assessment of WFD compliance contains a list of the options included in the programme, their construction start date and operation date (to define overlaps in the construction period). Informed through the option-level assessment which already have been set out per water body, a list of all WFD water bodies assessed for the individual options was assimilated. Where more than one option was assessed for the same water body a cumulative assessment has been undertaken of the multiple options, against the agreed set of WFD Assessment Objectives using the methodologies for the option-level assessment. This required the revision of the high level hydrological and/or hydrogeological assessment which underpins the testing of the WFD Assessment Objectives. It is noted that the programme level assessments include any additional linked water bodies which are impacted by the cumulative effect of options (in addition to those that are identified in the option-level assessment) – either downstream surface water bodies, or additional surface water bodies linked to groundwater bodies.

An overall WFD compliance statement for each programme has been prepared setting out compliance with each of the agreed WFD Assessment Objectives and the level of confidence in the assessment.

The results from this level of WFD assessment have been used to inform the preferred water resource plan.

2.2.3 Stage 3: Assessment of the Preferred draft WRMP

The cumulative impact of the whole draft WRMP, regional plan and with WRMPs for other water companies has been assessed following a similar process to that identified in **Section 2.2.2**.

A compliance statement of the preferred programme has been presented. This sets out compliance with each of the agreed WFD Assessment Objectives and the level of confidence in the assessment.

2.3 CONSULTATION

A draft WFD compliance assessment methodology report was issued to the relevant environmental regulators for WRMPs (the Environment Agency, Natural Resource Wales and Natural England) on 8th April 2021 to set out the method for completing the WFD compliance assessments for the water companies in the Water Resources West (WRW) region. A meeting was held with regulators on 28th April 2021 and comments on the report were received to get regulatory feedback on the draft methodology report. These comments were addressed and a Final WFD compliance assessment methodology report and comments log were issued to the regulators on 16th July 2021. A number of other consultation meetings with regulators were undertaken throughout the development of the WRMP24 and WRW regional plan including on 27th July 2021 to engage on the approach to environmental appraisal and on 10th November 2021 to share a summary of key options emerging and their option-level environmental assessments.

Further consultation will be undertaken with both stakeholders as necessary between the draft and final plan and this section will be updated accordingly.

3. OPTION-LEVEL (STAGE 1) WFD ASSESSMENT OUTCOMES

This section outlines:

- The options in the feasible list for Severn Trent's draft WRMP24 that have been subject to WFD compliance assessment.
- The final outcomes of the WFD compliance assessment at an option-level for each of the options in the feasible list for Severn Trent' draft WRMP24.

3.1 FEASIBLE OPTIONS INCLUDED IN THE WFD COMPLIANCE ASSESSMENT

Through an extensive optioneering process, considering a wide range of potential options to balance future supply and demand, Severn Trent has selected the most suitable options to make up the feasible options list. This list includes both demand side and supply side options, of which only the latter require a WFD Compliance Assessment. The supply side options are presented in **Table 3-1**.

Table 3-1 List of Severn Trent draft WRMP24 feasible options which have been subject to a WFD Compliance Assessment

Option Category	Draft WRMP24 Ref.	Option Name
Trunk mains renewal/new	5	Derwent Valley Transfer Main
Reservoir enlargement	6	Upper Derwent Valley Reservoir Expansion (UDVRE)
Groundwater enhancement	22	Recommission Elmhurst GW (groundwater) source
Water treatment works capacity increase	29	Homesford WTW (Water Treatment Works) capacity increase
New reservoir	31C	E. Midlands Raw Water Storage (CQ (Croft Quarry))
New reservoir	31D	E. Midlands Raw Water Storage (CHQ (Cliff Hill Quarry))
Water treatment works capacity increase	32	Little Eaton Expansion (supported by Carsington Reservoir)
Water treatment works capacity increase	33Z	Shelton WTW Expansion
Water reuse	38	Minworth effluent re-use (Large scheme)
Water reuse	39	Minworth effluent re-use (Medium scheme)
New surface water	44	New R Sow abstraction and WTW near Stafford
New surface water	54	River Soar to Cropston WTW
New surface water	58	River Weaver to New WTW at Stoke
Groundwater enhancement	64	Rehabilitation Milton GW Source
Water treatment works capacity increase	66	Strensham WTW Expansion
Internal potable transfer	79A	Wolves-Bham Strategic Link Main (large)
Internal potable transfer	79B	Wolves-Bham Strategic Link Main (small)
Reservoir enlargement	84A	Stanford Minor Dam Extension
Reservoir enlargement	84B	Lower Shustoke Minor Dam Extension
Reservoir enlargement	84C	Whitacre Minor Dam Extension
New surface water	88	River Weaver to Tittesworth WTW
Water treatment works capacity increase	95B	Ogston WTW Expansion
External potable bulk supply/transfer	101	Kinsall Additional Resource (UU (United Utilities) import)
New/Enhanced pumping station	103	Mardy Support Link
Internal potable transfer	104	Newark Support Link

Option Category	Draft WRMP24 Ref.	Option Name
Internal potable transfer	105	Ruyton Support Link
Internal potable transfer	108	Stoke to Stafford link main
Internal potable transfer	110	Wolves to Stafford link main
Internal potable transfer	111	Melbourne to Staffs link main
Internal potable transfer	112	Croxton GW to Hob Hill DSR (Distribution Service Reservoir)
External potable bulk supply/transfer	117	Peckforton Bulk Import from UU
Trunk mains renewal/new	120	River Severn to Draycote
Internal raw water transfer	121	Mythe to Mitcheldean main
Reservoir enlargement	122A	Draycote Reservoir WL (water level) increase (6%)
Reservoir enlargement	122B	Draycote Reservoir WL increase (25%)
Reservoir enlargement	122C	Draycote Reservoir WL increase (50%)
Reservoir enlargement	123A	Raise Dam at Tittesworth Reservoir (5%)
Reservoir enlargement	123B	Raise Dam at Tittesworth Reservoir (25%)
Internal raw water transfer	128	Carsington to Tittesworth main (large)
Internal raw water transfer	128Z	Carsington to Tittesworth main (small)
Internal potable transfer	132	Whaddon to Forest Transfer
Trunk mains renewal/new	134A	Blackbrook reservoir to Cropston WTW
Surface water enhancement	142	Utilise Linacre Reservoirs
New reservoir	143	W.Midlands (West Midlands) Raw Water Storage
New surface water	150	Little Haywood new WTW on Upper Trent
New surface water	152	Hampton Loade to Sedgley SR (Service Reservoir)
External raw water bulk supply/transfer	169	Terminate raw water export to Yorkshire Water
Reservoir enlargement	187A	Expand Carsington Reservoir (10000 Ml (megalitres))
Reservoir enlargement	187B	Expand Carsington Reservoir (16000 Ml)
Reservoir enlargement	187C	Expand Carsington Reservoir (25000 Ml)
New surface water	190	Third party reservoir and new WTW's
Groundwater enhancement	191	Increase Diddlebury/Munslow GW sources and remove network constraints.
External potable bulk supply/transfer	301A	UU import from Llanforda to Shelton (small)
External potable bulk supply/transfer	301B	UU import from Llanforda to Shelton (large)
External raw water bulk supply/transfer	303A	UU release from Vyrnwy (75 Ml/d (megalitres per day))
External raw water bulk supply/transfer	303B	UU release from Vyrnwy (40 Ml/d)
External raw water bulk supply/transfer	303C	UU release from Vyrnwy (25 Ml/d)
Internal potable transfer	304	Ambergate to Mid-Notts transfer
Internal potable transfer	305	Heathy Lea to North Notts transfer
Internal potable transfer	309	Transfer from Hampton Loade WTW to Nurton (large)
Internal potable transfer	309Z	Transfer from Hampton Loade WTW to Nurton (small)
Trunk mains renewal/new	313	DVA (Derwent Valley Aqueduct) capacity increase to Heathy Lea (reduce Rivelin export)
Trunk mains renewal/new	314	Expand Bamford WTW and DVA capacity increase (terminate Rivelin export)
New surface water	406	New abstraction and WTW on River Trent

Option Category	Draft WRMP24 Ref.	Option Name
Water treatment works capacity increase	420	Campion Hills WTW DO (Deployable Output) Recovery
Water treatment works capacity increase	423	Draycote WTW DO Recovery
Water treatment works capacity increase	426	Little Eaton WTW DO Recovery
Water treatment works capacity increase	429	Mythe WTW DO Recovery
Water treatment works capacity increase	430	Ogston WTW DO Recovery
Water treatment works capacity increase	431	Shelton WTW DO Recovery
Water treatment works capacity increase	434	Trimpley WTW DO Recovery
Water treatment works capacity increase	435	Whitacre WTW DO Recovery
Reservoir enlargement	437	Finham FE (Final Effluent) to expanded Draycote Reservoir and WTW
Reservoir enlargement	439	Longdon Marsh and increase Frankley output by 190 Ml/d
External potable bulk supply/transfer	523	UU Mow Cop BH (Borehole) Treated water import
New groundwater	528	New GW Source Soar – PT (Permo-Triassic) Sandstone nr Coalville
External raw water bulk supply/transfer	549A	Raw water transfer from Congleton to Tittesworth Reservoir (UU import)
External potable bulk supply/transfer	549B	Treated water transfer from Congleton to Tittesworth Reservoir (UU import)
External potable bulk supply/transfer	552	UU Bearstone treated water Import
Trunk mains renewal/new	556	ASL (Avon Soar Link main) Capacity Increase - Hallgates to Oldbury
Trunk mains renewal/new	557	ASL Capacity Increase - Oldbury to Meriden

3.2 OPTION LEVEL WFD COMPLIANCE ASSESSMENT

This section presents a summary of the option level WFD Compliance Assessment for all options included in the feasible list. It is the outcome of methodological Stage 1; a summary of the screening (methodological Step 1 and Step 2) and impact assessment (methodological Step 3) which are reported in **Appendix A** and **Appendix B** respectively. The option level WFD Compliance Assessment summary is presented in **Table 3-2**. The summary includes those options screened as without risk of deterioration in WFD status and without risk to achieving WFD objectives (as identified in **Appendix A**) together with results of the assessment of those options passed forward to Step 3 (as assessed in **Appendix B**).

Table 3-2 Option-level WFD Compliance Assessment Summary

Option Name	Draft WRMP24 Ref.	Outcome	Reason, if not confirmed as compliant
Derwent Valley Transfer Main	5	Compliant (high conf.)	
Upper Derwent Valley Reservoir Expansion (UDVRE)	6	Uncertain	Uncertain in the Derwent from Westend to Wye (GB104028057880) river water body due to potential for deterioration in the fish, invertebrates and macrophytes/phytobenthos status. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of this option on the biological status elements in this water body.
Recommission Elmhurst GW source	22	Non-compliant (low conf.)	Non-compliant in the Manchester and East Cheshire Carboniferous Aquifers (GB41202G102900) groundwater body due to potential for deterioration in groundwater dependent terrestrial ecosystems, water balance and chemical status. Also potential for introduction of impediments to Good chemical status.
Homesford WTW capacity increase	29	Compliant (med. conf.)	
E. Midlands Raw Water Storage (CQ)	31C	Compliant (med. conf.)	
E. Midlands Raw Water Storage (CHQ)	31D	Compliant (high conf.)	
Little Eaton Expansion (supported by Carsington Reservoir)	32	Compliant (med. conf.)	
Shelton WTW Expansion	33Z	Compliant (med. conf.)	
Minworth effluent re-use (Large scheme)	38	Non-compliant (low conf.)	Non-compliant in the Tame – R Rea to R Blythe (GB104028046841) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good phys-chem water quality status. Non-compliant in the Tame from R Blythe to River Anker (GB104028046440) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem wate quality status. Also potential for introduction of impediments to Good invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Non-compliant in the Tame from River Anker to River Trent (GB104028047050) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem wate quality status. Also potential for introduction

Option Name	Draft WRMP24 Ref.	Outcome	Reason, if not confirmed as compliant
			of impediments to Good invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Non-compliant in the Trent – R Tame to R Dove (GB104028047180) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem wate quality status. Also potential for introduction of impediments to Good fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Non-compliant in Trent from Dove to Derwent (GB104028047420) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem wate quality status. Also potential for introduction of impediments to Good macrophytes/phytobenthos and phys-chem water quality status. Further investigation is required to improve confidence in assessment.
Minworth effluent re-use (Medium scheme)	39	Non-compliant (low conf.)	Non-compliant in Tame – R Rea to R Blythe (GB104028046841) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem wate quality status. Also potential for introduction of impediments to Good phys-chem water quality status. Further investigation is required to improve confidence in assessment.
New R Sow abstraction and WTW near Stafford	44	Compliant (med. conf.)	
River Soar to Cropston WTW	54	Compliant (low conf.)	
River Weaver to New WTW at Stoke	58	Compliant (low conf.)	
Rehabilitation Milton GW Source	64	Non-compliant (low conf.)	Non-compliant in the Tame Anker Mease – PT Sandstone Burton (GB40401G301200) groundwater body due to potential for deterioration in dependent surface water body status, groundwater depending terrestrial ecosystems, water balance and chemical status. Also potential for introduction of impediments to Good chemical status. Uncertain in the Milton Brook Catchment (trib of Trent) (GB104028047360) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Further investigation into the hydrological impact of the option is required to improve confidence in assessment.
Strensham WTW Expansion	66	Compliant (med. conf.)	
Wolves-Bham Strategic Link Main (large)	79A	Compliant (high conf.)	
Wolves-Bham Strategic Link Main (small)	79B	Compliant (high conf.)	
Stanford Minor Dam Extension	84A	Compliant (high conf.)	
Lower Shustoke Minor Dam Extension	84B	Uncertain	Uncertain in the Bourne – source to R Tame (GB104028042480) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water

Option Name	Draft WRMP24 Ref.	Outcome	Reason, if not confirmed as compliant
			quality status. Also potential for introduction of impediments to Good fish and phys-chem water quality status. Greater certainty required over the source of the raw water for this option.
Whitacre Minor Dam Extension	84C	Compliant (high conf.)	
River Weaver to Tittesworth WTW	88	Compliant (low conf.)	
Ogston WTW Expansion	95B	Compliant (low conf.)	
Kinsall Additional Resource (UU import)	101	Compliant (high conf.)	
Mardy Support Link	103	Compliant (high conf.)	
Newark Support Link	104	Compliant (high conf.)	
Ruyton Support Link	105	Compliant (high conf.)	
Stoke to Stafford link main	108	Compliant (high conf.)	
Wolves to Stafford link main	110	Compliant (high conf.)	
Melbourne to Staffs link main	111	Compliant (high conf.)	
Croxton GW to Hob Hill DSR	112	Non-compliant (low conf.)	Non-compliant in the Staffordshire Trent Valley – PT Sandstone Bishops Wood (GB40401G300200) groundwater body due to potential for deterioration in dependent surface water body status, groundwater dependent terrestrial ecosystems and water balance status. Non-compliant in the Sow from Source to Brockton Brook (GB104028052990) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos, phys-chem water quality and chemicals status. Also potential for introduction of impediments to Good invertebrates, macrophytes/phytobenthos, phys-chem water quality and chemicals status.
Peckforton Bulk Import from UU	117	Compliant (high conf.)	
River Severn to Draycote	120	Non-compliant (med. conf.)	Non-compliant in the Tame – R Rea to R Blythe (GB104028046841) river water body due to potential for deterioration in the fish, invertebrates and phys-chem water quality status. Also potential for introduction of impediments to Good phys-chem water quality status. Non-compliant in the Tame from R Blythe to River Anker (GB104028046440) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Non-compliant in the Tame from River Anker to River Trent (GB104028047050) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction

Option Name	Draft WRMP24 Ref.	Outcome	Reason, if not confirmed as compliant
			of impediments to Good invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Non-compliant in the Trent – R Tame to R Dove (GB104028047180) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Non-compliant in the Trent from Dove to Derwent (GB104028047420) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good macrophytes/phytobenthos and phys-chem water quality status. Non-compliant in the Avon (Warks) – conf R Sowe to conf R Leam (GB109054043840) river water body due to potential for deterioration in the fish, invertebrates and macrophytes/phytobenthos status. Non-compliant in the Avon (Wark) conf R Leam to Tramway Br, Stratford (GB109054044402) river water body due to potential for deterioration in the fish, invertebrates and macrophytes/phytobenthos status. Also potential for introduction of impediments to Good macrophytes/phytobenthos status. Further investigation is needed to improve confidence in assessment.
Mythe to Mitcheldean main	121	Compliant (high conf.)	
Draycote Reservoir WL increase (6%)	122A	Compliant (high conf.)	
Draycote Reservoir WL increase (25%)	122B	Uncertain	Uncertain in the Leam – conf R Itchen to conf R Avon (GB109054044140) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good macrophytes/phytobenthos and phys-chem water quality status. Further information on the seasonality and volume of the potential abstraction is required in order to make an assessment.
Draycote Reservoir WL increase (50%)	122C	Uncertain	Uncertain in the Leam – conf R Itchen to conf R Avon (GB109054044140) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good macrophytes/phytobenthos and phys-chem water quality status. Further information on the seasonality and volume of the potential abstraction is required in order to make an assessment.
Raise Dam at Tittesworth Reservoir (5%)	123A	Compliant (low conf.)	
Raise Dam at Tittesworth Reservoir (25%)	123B	Uncertain	Uncertain in the Churnet from Meerbrook to Leekbrook (GB104028052770) river water body due to potential for deterioration in the fish, invertebrates and macrophytes/phytobenthos status. Also potential for introduction of impediments to Good fish and macrophytes/phytobenthos status. A more detailed assessment is required in order to establish the impact that increasing the storage in Tittesworth Reservoir would have on the flow regime of the River Churnet.

Option Name	Draft WRMP24 Ref.	Outcome	Reason, if not confirmed as compliant
Carsington to Tittesworth main (large)	128	Compliant (high conf.)	
Carsington to Tittesworth main (small)	128Z	Compliant (high conf.)	
Whaddon to Forest Transfer	132	Compliant (high conf.)	
Blackbrook reservoir to Cropston WTW	134A	Compliant (high conf.)	
Utilise Linacre Reservoirs	142	Compliant (high conf.)	
W.Midlands Raw Water Storage	143	Compliant (med. conf.)	
Little Haywood new WTW on Upper Trent	150	Compliant (med. conf.)	
Hampton Loade to Sedgley SR	152	Compliant (med. conf.)	
Terminate raw water export to Yorkshire Water	169	Compliant (high conf.)	
Expand Carsington Reservoir (10000 Ml)	187A	Compliant (low conf.)	
Expand Carsington Reservoir (16000 Ml)	187B	Compliant (low conf.)	
Expand Carsington Reservoir (25000 Ml)	187C	Compliant (low conf.)	
Third party reservoir new WTW's	190	Compliant (high conf.)	
Increase Diddlebury/Munslow GW sources and remove network constraints.	191	Non-compliant (low conf.)	Non-compliant in the Teme – Secondary Combined (GB40902G991000) groundwater body due to the potential for deterioration in the dependant surface water body status. Non-compliant in the Corve – source to conf unnamed trib (GB109054049110) surface water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good fish and phys-chem water quality status. Non-compliant in the Corve – conf unnamed trib to conf Seifton Bk (GB109054044050) surface water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos, phys-chem water quality and chemicals status. Also potential for introduction of impediments to Good phys-chem water quality and chemicals status.
UU import from Llanforda to Shelton (small)	301A	Compliant (high conf.)	

Option Name	Draft WRMP24 Ref.	Outcome	Reason, if not confirmed as compliant
UU import from Llanforda to Shelton (large)	301B	Compliant (high conf.)	
UU release from Vyrnwy (75 Ml/d)	303A	Compliant (med. conf.)	
UU release from Vyrnwy (40 Ml/d)	303B	Compliant (med. conf.)	
UU release from Vyrnwy (25 Ml/d)	303C	Compliant (med. conf.)	
Ambergate to Mid-Notts transfer	304	Compliant (high conf.)	
Heathy Lea to North Notts transfer	305	Compliant (high conf.)	
Transfer from Hampton Loade WTW to Nurton DSR (large)	309	Compliant (high conf.)	
Transfer from Hampton Loade WTW to Nurton DSR (small)	309Z	Compliant (high conf.)	
DVA capacity increase to Heathy Lea (reduce Rivelin export)	313	Compliant (high conf.)	
Expand Bamford WTW and DVA capacity increase (terminate Rivelin export)	314	Compliant (high conf.)	
New abstraction and WTW on River Trent	406	Compliant (high conf.)	
Campion Hills WTW DO Recovery	420	Non-compliant (low conf.)	Non-compliant in the Leam – conf R Itchen to conf R Avon (GB109054044140) river water body due to potential for deterioration in the fish, invertebrates and macrophytes/phytobenthos status. Also potential for introduction of impediments to Good in the macrophytes/phytobenthos status. Further investigation is required in order to rule out the potential for deterioration in these elements.
Draycote WTW DO Recovery	423	Compliant (high conf.)	
Little Eaton WTW DO Recovery	426	Compliant (med. conf.)	
Mythe WTW DO Recovery	429	Compliant (high conf.)	
Ogston WTW DO Recovery	430	Compliant (high conf.)	
Shelton WTW DO Recovery	431	Compliant (med. conf.)	

Option Name	Draft WRMP24 Ref.	Outcome	Reason, if not confirmed as compliant
Trimpley WTW DO Recovery	434	Compliant (high conf.)	
Whitacre WTW DO Recovery	435	Compliant (high conf.)	
Finham FE to expanded Draycote Reservoir and WTW	437	Compliant (med. conf.)	
Longdon Marsh and increase Frankley output by 190 Ml/d	439	Compliant (low conf.)	
UU Mow Cop BH Treated water import	523	Compliant (high conf.)	
New GW Source Soar - PT Sandstone nr Coalville	528	Non-compliant (low conf.)	Non-compliant in the Soar – PT Sandstone (GB40401G302800) groundwater body due to potential for deterioration in the dependent surface water body, groundwater dependent terrestrial ecosystem and chemical status. Also potential for introduction of impediments to Good chemical status. Uncertain in the Ramsley Brook from Source to Carr-New Brook (GB104028047340) river water body due to potential for deterioration in the fish, invertebrates, macrophytes/phytobenthos and phys-chem water quality status. Also potential for introduction of impediments to Good macrophytes/phytobenthos and phys-chem water quality status. Further investigation into the hydrological impact of the option is required.
Raw water transfer from Congleton to Tittesworth Reservoir (UU import)	549A	Compliant (high conf.)	
Treated water transfer from Congleton to Tittesworth Reservoir (UU import)	549B	Compliant (high conf.)	
UU Bearstone treated water Import	552	Compliant (high conf.)	
ASL Capacity Increase - Hallgates to Oldbury	556	Compliant (high conf.)	
ASL Capacity Increase - Oldbury to Meriden	557	Compliant (high conf.)	

4. PROGRAMME-LEVEL (STAGE 2) WFD ASSESSMENT

This section presents the programme-level, cumulative assessment of each of the plans within the Severn Trent draft WRMP24. In its draft WRMP24, Severn Trent has set out six candidate programmes, each of which have been assessed to understand their WFD compliance. The programmes that have been set out as part of the draft WRMP24 are as follows:

- Preferred Programme
- Least Cost Programme (*the same as the Preferred Programme*)
- Ofwat Core Programme
- AP2 – Environmental Stretch (S11)
- AP6 – Climate Adjustment (S14)
- AP5 – Gated Success (S4).

The WFD compliance of each of these programmes is presented in the respective sections below.

4.1 PREFERRED PROGRAMME

In order to understand the WFD compliance of the draft WRMP a cumulative assessment has been undertaken of the options within the preferred programme. The option-level assessments (**Section** Error! Reference source not found.) have been used to inform the cumulative assessment of the preferred plan. For each WFD water body that is impacted by multiple options within the plan, an impact assessment has been undertaken to understand the cumulative impact on the receptors within that water body as a result of all of the options being in operation.

The preferred programme includes 43 supply-side options which have been subject to WFD compliance assessment. The supply-side options included within the preferred programme, along with their first year of use, are listed below.

- 29 Homesford WTW capacity increase 2030-31
- 33Z Shelton WTW Expansion 2030-31
- 66 Strensham WTW Expansion 2030-31
- 122A Draycote Reservoir WL increase (6%) 2030-31
- 128 Carsington to Tittesworth main (large) 2030-31
- 303C UU release from Vyrnwy (25 Ml/d) 2030-31
- 305 Heathy Lea to North Notts transfer 2030-31
- 426 Little Eaton WTW DO Recovery 2030-31
- 434 Trimpley WTW DO Recovery 2030-31
- 435 Whitacre WTW DO Recovery 2030-31
- 103 Mardy Support Link 2035-36
- 169 Terminate raw water export to Yorkshire Water 2035-36
- 301B UU import from Llanforda to Shelton (large) 2040-41
- 44 New R Sow abstraction and WTW near Stafford 2045-46
- 95B Ogston WTW Expansion 2045-46
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2050-51
- 22 Recommission Elmhurst GW source 2050-51
- 31C E. Midlands Raw Water Storage (CQ) 2050-51
- 58 River Weaver to New WTW at Stoke 2050-51
- 64 Rehabilitation Milton GW Source 2050-51
- 79A Wolves-Bham Strategic Link Main (large) 2050-51
- 84A Stanford Minor Dam Extension (84A) 2050-51

- 84B Lower Shustoke Minor Dam Extension (84B) 2050-51
- 84C Whitacre Minor Dam Extension (84C) 2050-51
- 105 Ruyton Support Link 2050-51
- 117 Peckforton Bulk Import from UU 2050-51
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050-51
- 128Z Carsington to Tittesworth main (small) 2050-51
- 143 W.Midlands Raw Water Storage 2050-51
- 190 Third party reservoir and new WTW's 2050-51
- 304 Ambergate to Mid-Notts transfer 2050-51
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050-51
- 406 New abstraction and WTW on River Trent 2050-51
- 423 Draycote WTW DO Recovery 2050-51
- 523 UU Mow Cop BH Treated water import 2050-51
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050-51
- 552 UU Bearstone treated water Import 2050-51
- 557 ASL Capacity Increase - Oldbury to Meriden 2050-51
- 134A Blackbrook reservoir to Cropston WTW 2057-58
- 420 Campion Hills WTW DO Recovery 2059-60
- 31D E. Midlands Raw Water Storage (CHQ) 2060-61
- 101 Kinsall Additional Resource (UU import) 2062-63
- 187C Expand Carsington Reservoir (25000 Ml) 2067-68

Of the preferred programme of supply-side options, none would be operational within the next AMP cycle (AMP8), 15 would be operational within the 25 year planning period and 28 would be operational at a date later than the 25 year planning period.

The option-level WFD assessment presented in **Section 3** identified four options to be potentially non-compliant with a low confidence rating. Three options have been identified as having uncertain WFD compliance and five options have been identified as being compliant with a low confidence rating. The remaining 31 options have been assessed as WFD compliant with a medium or high confidence rating.

Table 4-1 displays the options that make up the preferred programme and identifies those water bodies assessed for each option. Water bodies that are potentially impacted by multiple options (as informed through the option-level assessment) have been highlighted for a cumulative assessment. In total there are eight water bodies identified for cumulative assessment:

- Cumulative PP1 - GB104028057880 - Derwent from Westend to Wye – associated with Option 6 and Option 169
- Cumulative PP2 - GB104028052390 - Derwent Wye to Amber – associated with Option 6, Option 29, Option 95B and Option 187C
- Cumulative PP3 - GB104028042572 - Blythe from Patrick Bridge to R Tame – associated with Option 84C and Option 435
- Cumulative PP4 - GB30432299 - Howden Reservoir – associated with Option 6 and Option 169
- Cumulative PP5 - GB30432359 - Derwent Upper Reservoir – associated with Option 6 and Option 169
- Cumulative PP6 - GB30432459 - Ladybower Reservoir – associated with Option 6 and Option 169
- Cumulative PP7 - GB30447006 - Carsington Water – associated with Option 95, Option 128, Option 128Z and Option 187C
- Cumulative PP8 - GB30938250 - Draycote Reservoir – associated with Option 122A and Option 423

Each of the cumulative impacts identified above have undergone a WFD compliance assessment to identify the compliance against the three principle WFD Assessment Objectives. The WFD screening and impact assessments for the programme-level cumulative assessments are presented in **Appendix C** and **Appendix D**, respectively.

A summary of WFD compliance against each of the water bodies impacted by the Severn Trent preferred programme is outline in **Table 4-2**. Of the water bodies impacted by the preferred programme options, four water bodies have been identified as having potentially WFD non-compliant impacts associated with options within the preferred programme, however, these would not be impacted until 2050-51. Further investigations are advocated into these potential impacts which should be undertaken in order to improve the confidence in these assessments in subsequent WRMPs. None of the water bodies have been identified to having certain WFD non-compliance and each could potentially be found compliant through further investigations and operational refinement of the options that impact them.

Six water bodies have uncertain WFD compliance risks associated with options within the preferred programme. Of these, two are on the River Derwent and the uncertainty is driven mostly by the change in flow regime on the River Derwent associated with the expansion of the Derwent Valley Reservoirs (Option 6) which is undergoing further investigation through the Upper Derwent Valley Reservoir Expansion (UDVRE) Strategic Resources Option (SRO) assessment as part of the RAPID Gated process. With the operation of this option set for 2050-51, future iterations of the WRMP can make more confident conclusions of the WFD compliance on these water bodies based on the UDVRE SRO environmental assessments. The other water bodies where uncertain impacts have been identified are also associated with options set to be operational at the same time as the UDVRE option and assessments for these can also be updated in future WRMPs based on the suggested investigations.

Options that are compliant with low and medium confidence have also been identified in the table below and suggestions on how to improve the confidence in these assessments have been outlined.

None of the options in the Severn Trent preferred programme for the dWRMP24 would assist any of the progressive WFD Assessment Objectives listed in **Section 2.1.2**.

Table 4-1 Identification of impacts on water bodies associated with the Severn Trent draft WRMP preferred programme.

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
River	GB104028057880 - Derwent from Westend to Wye	✓																									✓																		
	GB104028052390 - Derwent Wye to Amber	✓		✓												✓												✓																		
	GB112068055360 - Biddulph Brook		✓																																										
	GB104028046880 - Soar from Thurlaston Brook to Sence				✓																																								
	GB104028047180 - Trent - R Tame to R Dove					✓																																							
	GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk						✓																																						
	GB104028047190 - River Sow from R Penk to R Trent							✓																																					
	GB112068060460 - Weaver (Marbury Brook to Dane)								✓																																				
	GB104028047360 - Milton Brook Catchment (trib of Trent)									✓																																			
	GB109054039760 - Severn - conf R Teme to conf R Avon										✓																																		

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
	GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk												✓																															
	GB104028042480 - Bourne - source to R Tame													✓																															
	GB104028042572 - Blythe from Patrick Bridge to R Tame														✓																										✓					
	GB104028052310 - Derwent from Amber to Bottle Brook																																					✓							
	GB104028052770 - Churnet from Meerbrook to Leekbrook																					✓																							
	GB104028047070 - Black Brook from Source to Grace Dieu Brook																								✓																				
	GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk																									✓																				
	GB105031050550 - Eye Brook																												✓																
	GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy																														✓															
	GB109054049145 - Severn - conf R																																	✓											

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
	Worfe to conf R Stour																																											
	GB104028053110 - Trent from Soar to The Beck																																		✓										
	GB109054044140 - Leam - conf R Itchen to conf R Avon																																			✓									
	GB104028047340 - Ramsley Brook from Source to Carr-New Brook																																									✓		
	GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford																																			✓									
Groundwater	GB41202G102900 - Manchester and East Cheshire Carboniferous Aquifers		✓																																									
Groundwater	GB40401G301200 - Tame Anker Mease - PT Sandstone Burton									✓																																		
Groundwater	GB40401G302800 - Soar - PT Sandstone																																									✓		
Groundwater	GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined																																			✓								

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
Lake	GB30432299 - Howden Reservoir	✓																									✓																		
	GB30432359 - Derwent Upper Reservoir	✓																									✓																		
	GB30432459 - Ladybower Reservoir	✓																									✓																		
	GB30937864 - Stanford Reservoir												✓																																	
	GB30437497 - Shustoke Reservoirs													✓																																	
	GB30447006 - Carsington Water															✓							✓	✓				✓																		
	GB30433781 - Ogston Reservoir															✓																														
	GB30938250 - Draycote Reservoir																				✓																	✓									
	GB30433790 - Tittesworth Reservoir																					✓																								
	GB30435928 - Blackbrook Reservoir																								✓																					
	GB30537182 - Eyebrook Reservoir																												✓																
	GB30937959 - Trimpley Reservoir																																						✓						

Cumulative							
PP1	PP2	PP3	PP4	PP5	PP6	PP7	PP8

Table 4-2 Overall WFD compliance of the water bodies impacted by the preferred programme

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028057880 - Derwent from Westend to Wye	6 169 (Cumulative PP1)	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoirs and termination of the export from these reservoirs to Yorkshire Water would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. Individually, Option 169 has been assessed as compliant (high confidence) in this water body. The most significant impact here is associated with the Upper Derwent Valley reservoirs expansion (Option 6), which is the subject of a SRO assessment. The outputs from the Gate 2 WFD assessment for this SRO are not available at the time of writing this assessment. With the operation date for this option set for 2050-51, this assessment can be revised with greater confidence in future iterations of the WRMP based on the understanding through these SRO
GB104028052390 - Derwent Wye to Amber	6 29 95B 187C (Cumulative PP2)	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoir would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. It is also unclear how the increase in capacity of the Upper Derwent Valley Reservoirs would impact abstraction from the Ambergate intake within this water body. Investigations are also required to better understand how expanding Carsington Reservoir and Ogston WTW would impact the rates abstracted at Ambergate WTW, noting that the abstraction would be within license and constrained by the existing hands-off flow. Of these options, Option 29 and Option 95B are the only options to be operational within the 25 year planning period. Option 29, which would be operational 2030-31, has been assessed an option-level as compliant with medium confidence with the option leading to only a small flow reduction under high flow conditions. Option 95B, to be operational 2045-46, at an option-level has been assessed as compliant albeit with low confidence. With multiple WRMP cycles between the operation date of this option, and Option 6 and Option 187C, this assessment can be revised with greater confidence in subsequent WRMPs.
GB112068055360 - Biddulph Brook	22	Compliant (low conf.)	Option 22 would involve abstraction from a groundwater body that is potentially in hydraulic connection with this surface water body. Though it is not expected that there would be significant hydrological change in this water body, this is currently based off limited data. Further research is required into the surface/groundwater interaction in this water body in order to improve confidence in this assessment.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028046880 - Soar from Thurlaston Brook to Sence	31C	Compliant (medium conf.)	Option 31C is a new surface water abstraction from this water body. With this being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are implemented to protect vulnerable river flows.
GB104028047180 - Trent - R Tame to R Dove	31D	Compliant (high conf.)	-
GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk	33Z	Compliant (medium conf.)	This option would only lead to a very small reduction in flows in the context of the River Severn. As such, there is no risk of deterioration in this water body associated with Option 33Z. It is worth noting that the CAMS indicates that no water is available for abstraction from this water body.
GB104028047190 - River Sow from R Penk to R Trent	44	Compliant (medium conf.)	Option 44 is a new surface water abstraction from this water body. With this being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are operational to protect vulnerable river flows.
GB112068060460 - Weaver (Marbury Brook to Dane)	58	Compliant (low conf.)	Option 58 is a new surface water abstraction from this water body. With this 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. The operational date of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028047360 - Milton Brook Catchment (trib of Trent)	64	Uncertain	Option 64 would involve abstraction from a groundwater body that is potentially in hydraulic connection with this surface water body. There is little hydrological information for Milton Brook therefore it is not possible to estimate the magnitude of hydrological impact and establish the pathway to the impacts on the water quality and biological status elements in this water body. The operational date of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054039760 - Severn - conf R Teme to conf R Avon	66	Compliant (low conf.)	Option 66 is a new surface water abstraction from this water body. The abstraction rate is only minor in comparison to the River Severn flows so it is not expected that this would lead to any WFD compliance risks. It is worth noting that there are water quality pressures in the water body and the CAMS indicates that there is no water available for abstraction from this water body.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			The operational date of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk	84A	Compliant (high conf.)	-
GB104028042480 - Bourne - source to R Tame	84B	Uncertain	There is uncertainty over the source water that will be used to supply the expansion of Lower Shustoke Reservoir with the water possibly being abstracted from this water body. With the magnitude of potential abstraction/flow reduction uncertain, it is difficult at this stage to determine the compliance of this water body as a result of Option 84B. The operational date of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB104028042572 - Blythe from Patrick Bridge to R Tame	84C 435 (Cumulative PP3)	Compliant (high conf.)	-
GB104028052310 - Derwent from Amber to Bottle Brook	426	Compliant (med. conf.)	Option 66 would allow increased abstraction from this water body under existing license conditions. This would only be a small hydrological change, insufficient to impact any elements in the water body. It is worth noting that the CAMS indicates that there is no additional water available for abstraction in this water body.
GB104028052770 - Churnet from Meerbrook to Leekbrook	123B	Uncertain	There is uncertainty over how increasing the capacity of Tittesworth Reservoir (Option 123B) would impact the high flow events from the reservoir. This would, in turn, have an impact on the flow regime of the River Churnet. Water resource modelling is recommended to understand how this flow regime may change in order to better assess the potential impacts on the WFD status elements in this water body. The operational date of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028047070 - Black Brook from Source to Grace Dieu Brook	134A	Compliant (high conf.)	-
GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk	143	Compliant (med. conf.)	Option 143 would lead to a reduction in high flows and an increase in low flows in this water body. In the context of the River Severn, these would only be small flow changes and unlikely to impact any of the status elements in the water body. License conditions would need to be implemented to protect vulnerable flows.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB105031050550 - Eye Brook	190	Compliant (high conf.)	-
GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	303C	Compliant (med. conf.)	The WFD assessment here is in line with the Gate 2 Severn-Thames Transfer (STT) Solution SRO WFD Regulation Compliance assessment of a 25 Ml/d release from the River Vyrnwy. That assessment, appropriate for RAPID Gate 2 identified the release as WFD compliant. It is worth noting that the SRO assessment uses an operational regime that is based on the demand from the Water Resources South East region which is likely to differ from that of Severn Trent's so the option assessment is not directly transferrable from the STT assessment.
GB109054049145 - Severn - conf R Worfe to conf R Stour	309Z	Compliant (high conf.)	-
GB104028053110 - Trent from Soar to The Beck	406	Compliant (high conf.)	-
GB109054044140 - Leam - conf R Itchen to conf R Avon	420	Non-compliant (low conf.)	Option 420 has the potential to increase abstraction from this water body, within existing license, of which is indicated as having no water available for abstraction according to the CAMS. The source and increase in abstraction is unclear however there could be a significant reduction in flows in this water body, potentially exacerbating the flow pressure identified through the CAMS. This has the potential to cause deterioration in the biological status elements. There is the potential for the introduction of an impediment to Good macrophyte status with this currently at Poor status There are also water quality pressures in this water body and there could be deterioration/impediment to Good status in physico-chemical status elements, most notably phosphate. With this options operational date in 2059-60, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operational date in which this assessment can be reviewed with increased confidence.
GB104028047340 - Ramsley Brook from Source to Carr-New Brook	528	Uncertain	This water body has the potential to be impacted by the groundwater abstraction associated with Option 528. There is little known about both the surface water/groundwater interaction and the baseline flows in this water body. Further investigation into these is required to enable the impact on this water body to be assessed with confidence. The operational date of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford	420	Compliant (high conf.)	-

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB41202G102900 - Manchester and East Cheshire Carboniferous Aquifers	22	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 22. This has found potential non-compliance against the ground water dependent terrestrial ecosystem (GWDTE) test, water balance test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on the Biddulph Brook (GB112068055360) water body that, although assessed as compliant (low confidence), would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operational date in which this assessment can be reviewed with increased confidence.
GB40401G301200 - Tame Anker Mease - PT Sandstone Burton	64	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 64. This has found potential non-compliance against the GWDTE test, water balance test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on the Milton Brook Catchment (trib of Trent) (GB104028047360) water body that would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operational date in which this assessment can be reviewed with increased confidence.
GB40401G302800 - Soar - PT Sandstone	528	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 528. This has found potential non-compliance against the GWDTE test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on Ramsley Brook from Source to Carr-New Brook (GB104028047340) water body that would likely require further assessment to improve confidence in the assessment.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operational date in which this assessment can be reviewed with increased confidence.
GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined	420	Compliant (high conf.)	-
GB30432299 - Howden Reservoir	6 169 (Cumulative PP4)	Compliant (high conf.)	-
GB30432359 - Derwent Upper Reservoir	6 169 (Cumulative PP5)	Compliant (high conf.)	-
GB30432459 - Ladybower Reservoir	6 169 (Cumulative PP6)	Compliant (high conf.)	-
GB30937864 - Stanford Reservoir	84A	Compliant (high conf.)	-
GB30437497 - Shustoke Reservoirs	84B	Compliant (high conf.)	-
GB30447006 - Carsington Water	95B 128 128Z 190 (Cumulative PP7)	Compliant (high conf.)	-
GB30433781 - Ogston Reservoir	95B	Compliant	-

Water body	Option(s) impacting water body	WFD compliance summary	Summary
		(high conf.)	
GB30938250 - Draycote Reservoir	122A 423 (Cumulative PP8)	Compliant (high conf.)	-
GB30433790 - Tittesworth Reservoir	123B	Compliant (high conf.)	-
GB30435928 - Blackbrook Reservoir	134A	Compliant (high conf.)	-
GB30537182 - Eyebrook Reservoir	190	Compliant (high conf.)	-
GB30937959 - Trimpley Reservoir	434	Compliant (high conf.)	-

4.2 LEAST COST PROGRAMME

To ensure a robust optioneering process to determine the preferred programme, a series of alternative programmes have been assessed as part of the draft WRMP. The least cost programme is one of these and the supply-side options, and their operation dates, included in this programme are as follows:

- 29 Homesford WTW capacity increase 2030-31
- 33Z Shelton WTW Expansion 2030-31
- 66 Strensham WTW Expansion 2030-31
- 122A Draycote Reservoir WL increase (6%) 2030-31
- 128 Carsington to Tittesworth main (large) 2030-31
- 303C UU release from Vyrnwy (25 Ml/d) 2030-31
- 305 Heathy Lea to North Notts transfer 2030-31
- 426 Little Eaton WTW DO Recovery 2030-31
- 434 Trimpley WTW DO Recovery 2030-31
- 435 Whitacre WTW DO Recovery 2030-31
- 103 Mardy Support Link 2035-36
- 169 Terminate raw water export to Yorkshire Water 2035-36
- 301B UU import from Llanforda to Shelton (large) 2040-41
- 44 New R Sow abstraction and WTW near Stafford 2045-46
- 95B Ogston WTW Expansion 2045-46
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2050-51
- 22 Recommission Elmhurst GW source 2050-51
- 31C E. Midlands Raw Water Storage (CQ) 2050-51
- 58 River Weaver to New WTW at Stoke 2050-51
- 64 Rehabilitation Milton GW Source 2050-51
- 79A Wolves-Bham Strategic Link Main (large) 2050-51
- 84A Stanford Minor Dam Extension (84A) 2050-51
- 84B Lower Shustoke Minor Dam Extension (84B) 2050-51
- 84C Whitacre Minor Dam Extension (84C) 2050-51
- 105 Ruyton Support Link 2050-51
- 117 Peckforton Bulk Import from UU 2050-51
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050-51
- 128Z Carsington to Tittesworth main (small) 2050-51
- 143 W.Midlands Raw Water Storage 2050-51
- 190 Third party reservoir purchase and new WTW's 2050-51
- 304 Ambergate to Mid-Notts transfer 2050-51
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050-51
- 406 New abstraction and WTW on River Trent 2050-51
- 423 Draycote WTW DO Recovery 2050-51
- 523 UU Mow Cop BH Treated water import 2050-51
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050-51
- 552 UU Bearstone treated water Import 2050-51
- 557 ASL Capacity Increase - Oldbury to Meriden 2050-51
- 134A Blackbrook reservoir to Cropston WTW 2057-58
- 420 Campion Hills WTW DO Recovery 2059-60

- 31D E. Midlands Raw Water Storage (CHQ) 2060-61
- 101 Kinsall Additional Resource (UU import) 2062-63
- 187C Expand Carsington Reservoir (25000 Ml) 2067-68

The least cost programme is identical, in both options and operational dates, to the preferred programme. As such, the assessment of WFD compliance is in line with that presented in **Section 4.1**.

4.3 OFWAT CORE PROGRAMME

To ensure a robust optioneering process to determine the preferred programme, a series of alternative programmes have been assessed as part of the draft WRMP. The Ofwat core programme is one of these programmes and the supply-side options, and their operation dates, that are included in this programme are as follows:

- 29 Homesford WTW capacity increase 2030-31
- 33Z Shelton WTW Expansion 2030-31
- 66 Strensham WTW Expansion 2030-31
- 122A Draycote Reservoir WL increase (6%) 2030-31
- 128 Carsington to Tittesworth main (large) 2030-31
- 303C UU release from Vyrnwy (25 Ml/d) 2030-31
- 305 Heathy Lea to North Notts transfer 2030-31
- 426 Little Eaton WTW DO Recovery 2030-31
- 434 Trimpley WTW DO Recovery 2030-31
- 435 Whitacre WTW DO Recovery 2030-31
- 103 Mardy Support Link 2035-36
- 169 Terminate raw water export to Yorkshire Water 2035-36
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2040-41
- 301B UU import from Llanforda to Shelton (large) 2040-41
- 95B Ogston WTW Expansion 2045-46
- 112 Croxton GW to Hob Hill DSR 2045-46
- 304 Ambergate to Mid-Notts transfer 2060-61
- 79A Wolves-Bham Strategic Link Main (large) 2061-62
- 84A Stanford Minor Dam Extension (84A) 2061-62
- 84B Lower Shustoke Minor Dam Extension (84B) 2061-62
- 84C Whitacre Minor Dam Extension (84C) 2061-62
- 105 Ruyton Support Link 2061-62
- 557 ASL Capacity Increase - Oldbury to Meriden 2061-62
- 101 Kinsall Additional Resource (UU import) 2062-63
- 420 Campion Hills WTW DO Recovery 2064-65
- 117 Peckforton Bulk Import from UU 2065-66
- 423 Draycote WTW DO Recovery 2065-66
- 64 Rehabilitation Milton GW Source 2066-67
- 528 New GW Source Soar - PT Sandstone nr Coalville 2066-67
- 190 Third party reservoir purchase and new WTW's 2067-68
- 134A Blackbrook reservoir to Cropston WTW 2070-71
- 31C E. Midlands Raw Water Storage (CQ) 2071-72
- 187B Expand Carsington Reservoir (16000 Ml) 2074-75
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2079-80

The Ofwat core programme is mostly a subset of the preferred programme with 11 options removed and many of the options operational later in the programme. Two options have been added with 187B replacing 187C and operational in 2074-75. The second additional option is Option 112 for operation in 2045-46. Option 6 has been brought forward for operation in 2040-41.

The option-level WFD assessment identified four options to be potentially non-compliant with a low confidence rating. Two options have been identified as having uncertain WFD compliance and four options have been identified as being compliant with a low confidence rating. The remaining 24 options have been assessed as WFD compliant with a medium or high confidence rating.

The remaining 26 options have been assessed as WFD compliant with a medium or high confidence rating.

Table 4-3 displays the options that make up the Ofwat core programme and identifies those water bodies that are assessed for each option. Water bodies that are potentially impacted by multiple options (as informed through the option-level assessment) have been highlighted for a cumulative assessment. In total there are eight water bodies identified for cumulative assessment (see **Appendix C**):

- Cumulative OC1 - GB104028057880 - Derwent from Westend to Wye – associated with Option 6 and Option 169 – see assessment for PP1
- Cumulative OC2 - GB104028052390 - Derwent Wye to Amber – associated with Option 6, Option 29, Option 95B and 187B
- Cumulative OC3 - GB104028042572 - Blythe from Patrick Bridge to R Tame – associated with Option 84C and Option 435 – see assessment for PP3
- Cumulative OC4 - GB30432299 - Howden Reservoir – associated with Option 6 and Option 169 – see assessment for PP4
- Cumulative OC5 - GB30432359 - Derwent Upper Reservoir – associated with Option 6 and Option 169 – see assessment for PP5
- Cumulative OC6 - GB30432459 - Ladybower Reservoir – associated with Option 6 and Option 169 – see assessment for PP6
- Cumulative OC7 - GB30447006 - Carsington Water – associated with Option 95B, Option 128 and Option 187B
- Cumulative OC8 - GB30938250 - Draycote Reservoir – associated with Option 122A and Option 423 – see assessment for PP8

A summary of WFD compliance against each of the water bodies impacted by the Ofwat core programme is outline in **Table 4-4**. Of the water bodies impacted by the Ofwat core programme options, five water bodies have been identified as having potentially WFD non-compliant impacts. If this programme was to be selected for progression through the WRMP process, investigations would be advocated into these potential impacts in order to improve the confidence in these assessments in subsequent WRMPs. None of the water bodies have been identified to having certain WFD non-compliance and each could potentially be found compliant through further investigations and operational refinement of the options that impact them.

Five water bodies have uncertain WFD compliance risks associated with options within the Ofwat core programme. Of these, two are on the River Derwent and the uncertainty is driven mostly by the change in flow regime on the River Derwent associated with the expansion of the Derwent Valley Reservoirs (Option 6) which is undergoing further investigation through the UDVRE SRO assessment as part of the RAPID Gated process. With the operation of this option set for 2040-41, future iterations of the WRMP can make more confident conclusions of the WFD compliance on these water bodies based on the UDVRE SRO environmental assessments. The other water bodies where uncertain impacts have been identified are also associated with options set to be operational at a later date than the UDVRE option and assessments for these can also be updated in future WRMPs based on the suggested investigations.

Options that are compliant with low and medium confidence have also been identified in the table below and suggestions on how to improve the confidence in these assessments have been outlined.

None of the options in the Severn Trent Ofwat core programme would assist any of the progressive WFD Assessment Objectives listed in **Section 2.1.2**.

Table 4-3 Identification of impacts on water bodies associated with the Severn Trent draft WRMP Ofwat core programme.

WFD water body Type	ID & Name	6	29	31C	33Z	64	66	79A	84A	84B	84C	95B	101	103	105	112	117	122A	128	134A	169	187B	190	301B	303C	304	305	309Z	420	423	426	434	435	528	557
River	GB104028057880 - Derwent from Westend to Wye	✓																			✓														
	GB104028052390 - Derwent Wye to Amber	✓	✓									✓										✓														
	GB104028046880 - Soar from Thurlaston Brook to Sence			✓																															
	GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk				✓																														
	GB104028047360 - Milton Brook Catchment (trib of Trent)					✓																													
	GB109054039760 - Severn - conf R Teme to conf R Avon						✓																												
	GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk								✓																										
	GB104028042480 - Bourne - source to R Tame									✓																									
	GB104028042572 - Blythe from Patrick Bridge to R Tame										✓																							✓		
	GB104028052990 - Sow from Source to Brockton Brook															✓																				

WFD water body Type	ID & Name	6	29	31C	33Z	64	66	79A	84A	84B	84C	95B	101	103	105	112	117	122A	128	134A	169	187B	190	301B	303C	304	305	309Z	420	423	426	434	435	528	557
	GB104028052310 - Derwent from Amber to Bottle Brook																														✓				
	GB104028047070 - Black Brook from Source to Grace Dieu Brook																			✓															
	GB105031050550 - Eye Brook																						✓												
	GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy																								✓										
	GB109054049145 - Severn - conf R Worfe to conf R Stour																											✓							
	GB109054044140 - Leam - conf R Itchen to conf R Avon																												✓						
	GB104028047340 - Ramsley Brook from Source to Carr-New Brook																																	✓	
	GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford																												✓						
Groundwater	GB40401G301200 - Tame Anker Mease - PT Sandstone Burton					✓																													
	GB40401G302800 - Soar - PT Sandstone																																	✓	
	GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined																												✓						

WFD water body Type	ID & Name	6	29	31C	33Z	64	66	79A	84A	84B	84C	95B	101	103	105	112	117	122A	128	134A	169	187B	190	301B	303C	304	305	309Z	420	423	426	434	435	528	557
	GB40401G300200 - Staffordshire Trent Valley - PT Sandstone Bishops Wood															✓																			
Lake	GB30432299 - Howden Reservoir	✓																			✓														
Lake	GB30432359 - Derwent Upper Reservoir	✓																			✓														
Lake	GB30432459 - Ladybower Reservoir	✓																			✓														
Lake	GB30937864 - Stanford Reservoir								✓																										
Lake	GB30437497 - Shustoke Reservoirs									✓																									
Lake	GB30447006 - Carsington Water											✓							✓			✓													
Lake	GB30433781 - Ogston Reservoir											✓																							
Lake	GB30938250 - Draycote Reservoir																	✓												✓					
Lake	GB30435928 - Blackbrook Reservoir																			✓															
Lake	GB30537182 - Eyebrook Reservoir																						✓												
Lake	GB30937959 - Trimpley Reservoir																															✓			

Cumulative							
OC1	OC2	OC3	OC4	OC5	OC6	OC7	OC8

Table 4-4 Overall WFD compliance of the water bodies impacted by the Ofwat core programme

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028057880 - Derwent from Westend to Wye	6 169 (Cumulative OC1)	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoirs and termination of the export from these reservoirs to Yorkshire Water would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. Individually, Option 169 has been assessed as compliant (high confidence) in this water body. The most significant impact here is associated with the Upper Derwent Valley reservoirs expansion (Option 6), which is the subject of a SRO assessment. The outputs from the Gate 2 WFD assessment for this SRO are not available at the time of writing this assessment. With the operation date for this option set for 2040-41, this assessment can be revised with greater confidence in future iterations of the WRMP based on the understanding through these SRO
GB104028052390 - Derwent Wye to Amber	6 29 95B 187B (Cumulative OC2)	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoir would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. It is also unclear how the increase in capacity of the Upper Derwent Valley Reservoirs would impact abstraction from the Ambergate intake within this water body. Investigations are also required to better understand how expanding Carsington Reservoir and Ogston WTW would impact the rates abstracted at Ambergate WTW, noting that the abstraction would be within license and constrained by the existing hands-off flow. Of these options, Option 29, Option 95B and Option 187B are options to be operational within the 25 year planning period. Option 29, which would be operational 2030-31, has been assessed an option-level as compliant with medium confidence with the option leading to only a small flow reduction under high flow conditions. Option 6 and Option 95B, to be operational 2040-41 and 2045-46 respectively, each have uncertainty in their impacts on this water body, though each are assessed as compliant low confidence for this water body. With multiple WRMP cycles between the operation of these options, and Option187B, this assessment can be revised with greater confidence in subsequent WRMPs.
GB104028046880 - Soar from Thurlaston Brook to Sence	31C	Compliant (medium confidence)	Option 31C is a new surface water abstraction from this water body. With this being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are implemented to protect vulnerable river flows.
GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk	33Z	Compliant (medium conf.)	This option would only lead to a very small reduction in flows in the context of the River Severn. As such, there is no risk of deterioration in this water body associated with Option 33Z. It is worth noting that the CAMS indicates that no water is available for abstraction from this water body.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028047360 - Milton Brook Catchment (trib of Trent)	64	Uncertain	Option 64 would involve abstraction from a groundwater body that is potentially in hydraulic connection with this surface water body. There is little hydrological information for Milton Brook therefore it is not possible to estimate the magnitude of hydrological impact and establish the pathway to the impacts on the water quality and biological status elements in this water body. The operation of this option is set for 2066-67 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054039760 - Severn - conf R Teme to conf R Avon	66	Compliant (low conf.)	Option 66 is a new surface water abstraction from this water body. The abstraction rate is only minor in comparison to the River Severn flows so it is not expected that this would lead to any WFD compliance risks. It is worth noting that there are water quality pressures in the reach and the CAMS indicates that there is no water available for abstraction from this water body. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk	84A	Compliant (high conf.)	
GB104028042480 - Bourne - source to R Tame	84B	Uncertain	There is uncertainty over the source water that will be used to supply the expansion of Lower Shustoke Reservoir with the water possibly being abstracted from this water body. With the magnitude of potential abstraction/flow reduction uncertain, it is difficult at this stage to determine the compliance of this water body as a result of Option 84B. The operation of this option is set for 2061-62 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB104028042572 - Blythe from Patrick Bridge to R Tame	84C 435 (Cumulative OC3)	Compliant (high conf.)	
GB104028052990 - Sow from Source to Brockton Brook	112	Non-compliant (low conf.)	Option 112 has the potential to increase abstraction from a groundwater body that is potentially hydraulically linked to this water body. This water body has no water available for abstraction according to the CAMS. Though the extent of the hydraulic connectivity between the groundwater and surface water bodies, any reduction in flow may potentially exacerbate the flow pressure identified through the CAMS. This has the potential to cause deterioration in the biological status elements. There is the potential for the introduction of an impediment to Good invertebrate and macrophyte and phytobenthos status with these currently at Moderate and Poor status, respectively. There are also

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			water quality pressures in this water body and there could be deterioration/impediment to Good status in physico-chemical status elements, most notably phosphate and dissolved oxygen status. With this option set for operation in 2045-46, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB104028052310 - Derwent from Amber to Bottle Brook	426	Compliant (med. conf.)	Option 66 would allow increased abstraction from this water body under existing license conditions. This would only be a small hydrological change, insufficient to impact any elements in the water body. It is worth noting that the CAMS indicates that there is no additional water available for abstraction in this water body.
GB104028047070 - Black Brook from Source to Grace Dieu Brook	134A	Compliant (high conf.)	
GB105031050550 - Eye Brook	190	Compliant (high conf.)	
GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	303C	Compliant (med. conf.)	The WFD assessment here is in line with the Gate 2 STT Solution SRO WFD Regulation Compliance assessment of a 25 Ml/d release from the River Vyrnwy. That assessment, appropriate for RAPID Gate 2 identified the release as WFD compliant. It is worth noting that the SRO assessment uses an operational regime that is based on the demand from the Water Resources South East region which is likely to differ from that of Severn Trent's so the option assessment is not directly transferrable from the STT assessment.
GB109054049145 - Severn - conf R Worfe to conf R Stour	309Z	Compliant (high conf.)	
GB109054044140 - Leam - conf R Itchen to conf R Avon	420	Non-compliant (low conf.)	Option 420 has the potential to increase abstraction from this water body, within existing license, of which is indicated as having no water available for abstraction according to the CAMS. The source and increase in abstraction is unclear however there could be a significant reduction in flows in this water body, potentially exacerbating the flow pressure identified through the CAMS. This has the potential to cause deterioration in the biological status elements. There is the potential for the introduction of an impediment to Good macrophyte status with this currently at Poor status There are also water quality pressures in this water body and there could be deterioration/impediment to Good status in physico-chemical status elements, most notably phosphate. With this option set for operation in 2064-65, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028047340 - Ramsley Brook from Source to Carr-New Brook	528	Uncertain	This water body has the potential to be impacted by the groundwater abstraction associated with Option 528. There is little known about both the surface water/groundwater interaction and the baseline flows in this water body. Further investigation into these is required to enable the impact on this water body to be assessed with confidence. The operation of this option is set for 2066-67 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford	420	Compliant (high conf.)	
GB40401G301200 - Tame Anker Mease - PT Sandstone Burton	64	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 64. This has found potential non-compliance against the GWDTE test, water balance test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on the Milton Brook Catchment (trib of Trent) (GB104028047360) water body that would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2066-67, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40401G302800 - Soar - PT Sandstone	528	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 528. This has found potential non-compliance against the GWDTE test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on Ramsley Brook from Source to Carr-New Brook (GB104028047340) water body that would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2066-67, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined	420	Compliant (high conf.)	
GB40401G300200 - Staffordshire Trent Valley - PT Sandstone Bishops Wood	112	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 112. This has found potential non-compliance against the GWDTE test, water balance test and the dependent surface water body status test in this water body as a result of the additional abstraction. There are also potential impacts on the chemical elements in this water body water body that would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2045-46 there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB30432299 - Howden Reservoir	6 169 (Cumulative OC4)	Compliant (high conf.)	
GB30432359 - Derwent Upper Reservoir	6 169 (Cumulative OC5)	Compliant (high conf.)	
GB30432459 - Ladybower Reservoir	6 169 (Cumulative OC6)	Compliant (high conf.)	
GB30937864 - Stanford Reservoir	84A	Compliant (high conf.)	

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB30437497 - Shustoke Reservoirs	84B	Compliant (high conf.)	
GB30447006 - Carsington Water	95B 128 190 (Cumulative OC7)	Compliant (high conf.)	
GB30433781 - Ogston Reservoir	95B	Compliant (high conf.)	
GB30938250 - Draycote Reservoir	122A 423 (Cumulative OC8)	Compliant (high conf.)	
GB30435928 - Blackbrook Reservoir	134A	Compliant (high conf.)	
GB30537182 - Eyebrook Reservoir	190	Compliant (high conf.)	
GB30937959 - Trimpley Reservoir	434	Compliant (high conf.)	

4.4 ENVIRONMENTAL STRETCH

To ensure a robust optioneering process to determine the preferred programme, a series of alternative programmes have been assessed as part of the draft WRMP. The Environmental Stretch programme is one of these programmes and the supply-side options, and their implantation dates, that are included in this plan are as follows:

- 29 Homesford WTW capacity increase 2030-31
- 33Z Shelton WTW Expansion 2030-31
- 66 Strensham WTW Expansion 2030-31
- 122A Draycote Reservoir WL increase (6%) 2030-31
- 128 Carsington to Tittesworth main (large) 2030-31
- 303C UU release from Vyrnwy (25 Ml/d) 2030-31
- 305 Heathy Lea to North Notts transfer 2030-31
- 426 Little Eaton WTW DO Recovery 2030-31
- 434 Trimpley WTW DO Recovery 2030-31
- 435 Whitacre WTW DO Recovery 2030-31
- 169 Terminate raw water export to Yorkshire Water 2035-36
- 103 Mardy Support Link 2037-38
- 301B UU import from Llanforda to Shelton (large) 2040-41
- 44 New R Sow abstraction and WTW near Stafford 2045-46
- 95B Ogston WTW Expansion 2045-46
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2050-51
- 22 Recommission Elmhurst GW source 2050-51
- 31C E. Midlands Raw Water Storage (CQ) 2050-51
- 58 River Weaver to New WTW at Stoke 2050-51
- 64 Rehabilitation Milton GW Source 2050-51
- 79A Wolves-Bham Strategic Link Main (large) 2050-51
- 84A Stanford Minor Dam Extension (84A) 2050-51
- 84B Lower Shustoke Minor Dam Extension (84B) 2050-51
- 84C Whitacre Minor Dam Extension (84C) 2050-51
- 101 Kinsall Additional Resource (UU import) 2050-51
- 105 Ruyton Support Link 2050-51
- 117 Peckforton Bulk Import from UU 2050-51
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050-51
- 128Z Carsington to Tittesworth main (small) 2050-51
- 143 W.Midlands Raw Water Storage 2050-51
- 190 Third party reservoir and new WTW's 2050-51
- 304 Ambergate to Mid-Notts transfer 2050-51
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050-51
- 406 New abstraction and WTW on River Trent 2050-51
- 423 Draycote WTW DO Recovery 2050-51
- 523 UU Mow Cop BH Treated water import 2050-51
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050-51
- 552 UU Bearstone treated water Import 2050-51
- 557 ASL Capacity Increase - Oldbury to Meriden 2050-51

- 134A Blackbrook reservoir to Cropston WTW 2057-58
- 420 Campion Hills WTW DO Recovery 2059-60
- 31D E. Midlands Raw Water Storage (CHQ) 2060-61
- 187C Expand Carsington Reservoir (25000 Ml) 2067-68

The Environmental Stretch programme has two minor changes compared to the preferred programme with Option 103 being operational in 2037-38 instead of 2035-36 and Option 101 being operational in 2050-51 instead of 2061-62. Each of these options are assessed as compliant with high confidence. There are no differences in the options contained in either of these plans. With this programme being so similar to the preferred programme, the WFD compliance assessment is in line with that of the preferred programme set out in **Section 4.1**.

4.5 CLIMATE ADJUSTMENT

To ensure a robust optioneering process to determine the preferred programme, a series of alternative programmes have been assessed as part of the draft WRMP. The Climate Adjustment programme is one of these programmes and the supply-side options, and their implantation dates, that are included in this programme are as follows:

- 29 Homesford WTW capacity increase 2030-31
- 33Z Shelton WTW Expansion 2030-31
- 66 Strensham WTW Expansion 2030-31
- 122A Draycote Reservoir WL increase (6%) 2030-31
- 128 Carsington to Tittesworth main (large) 2030-31
- 303C UU release from Vyrnwy (25 Ml/d) 2030-31
- 305 Heathy Lea to North Notts transfer 2030-31
- 426 Little Eaton WTW DO Recovery 2030-31
- 434 Trimpley WTW DO Recovery 2030-31
- 435 Whitacre WTW DO Recovery 2030-31
- 169 Terminate raw water export to Yorkshire Water 2035-36
- 103 Mardy Support Link 2037-38
- 190 Third party reservoir and new WTW's 2040-41
- 301B UU import from Llanforda to Shelton (large) 2040-41
- 44 New R Sow abstraction and WTW near Stafford 2045-46
- 95B Ogston WTW Expansion 2045-46
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2050-51
- 22 Recommission Elmhurst GW source 2050-51
- 31C E. Midlands Raw Water Storage (CQ) 2050-51
- 58 River Weaver to New WTW at Stoke 2050-51
- 64 Rehabilitation Milton GW Source 2050-51
- 79A Wolves-Bham Strategic Link Main (large) 2050-51
- 84A Stanford Minor Dam Extension (84A) 2050-51
- 84B Lower Shustoke Minor Dam Extension (84B) 2050-51
- 84C Whitacre Minor Dam Extension (84C) 2050-51
- 105 Ruyton Support Link 2050-51
- 117 Peckforton Bulk Import from UU 2050-51
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050-51
- 128Z Carsington to Tittesworth main (small) 2050-51
- 143 W.Midlands Raw Water Storage 2050-51

- 304 Ambergate to Mid-Notts transfer 2050-51
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050-51
- 406 New abstraction and WTW on River Trent 2050-51
- 423 Draycote WTW DO Recovery 2050-51
- 523 UU Mow Cop BH Treated water import 2050-51
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050-51
- 552 UU Bearstone treated water Import 2050-51
- 557 ASL Capacity Increase - Oldbury to Meriden 2050-51
- 556 ASL Capacity Increase - Hallgates to Oldbury 2051-52
- 429 Mythe WTW DO Recovery 2056-57
- 134A Blackbrook reservoir to Cropston WTW 2057-58
- 420 Campion Hills WTW DO Recovery 2059-60
- 31D E. Midlands Raw Water Storage (CHQ) 2060-61
- 101 Kinsall Additional Resource (UU import) 2065-65
- 187C Expand Carsington Reservoir (25000 Ml) 2067-68

This programme is largely similar to the preferred programme however two options, Option 429 and Option 556, have been added. There are also some changes to the operation dates with Option 190 being brought earlier in the programme and Option 101 and 103 being operational slightly later.

Of the Climate Adjustment programme of options, none would be operational within the next AMP cycle (AMP8), 16 would be operational within the 25 year planning period and 29 would be operational at a date later than the 25 year planning period.

The option-level WFD assessment identified four options to be potentially non-compliant with a low confidence rating. Three options have been identified as having uncertain WFD compliance and four options have been identified as being compliant with a low confidence rating. The remaining 32 options have been assessed as WFD compliant with a medium or high confidence rating.

Table 4-5 displays the options that make up the Climate Adjustment programme and identifies those water bodies assessed for each option. Water bodies that are potentially impacted by multiple options (as informed through the option-level assessment) have been highlighted for a cumulative assessment. In total there are nine water bodies identified for cumulative assessment (See **Appendix C**):

- Cumulative CA1 - GB104028057880 - Derwent from Westend to Wye – associated with Option 6 and Option 169 – see assessment for PP1
- Cumulative CA2 - GB104028052390 - Derwent Wye to Amber – associated with Option 6, Option 29, Option 95B and Option 187C see assessment for PP2
- Cumulative CA3 - GB109054039760 - Severn - conf R Teme to conf R Avon associated with Option 66 and Option 429
- Cumulative CA4 - GB104028042572 - Blythe from Patrick Bridge to R Tame – associated with Option 84C and Option 435 - see assessment for PP3
- Cumulative CA5 - GB30432299 - Howden Reservoir – associated with Option 6 and Option 169 - see assessment for PP4
- Cumulative CA6 - GB30432359 - Derwent Upper Reservoir – associated with Option 6 and Option 169 - see assessment for PP5
- Cumulative CA7 - GB30432459 - Ladybower Reservoir – associated with Option 6 and Option 169 - see assessment for PP6
- Cumulative CA8 - GB30447006 - Carsington Water – associated with Option 95, Option 128, Option 128Z and Option 187C - see assessment for PP7
- Cumulative CA9 - GB30938250 - Draycote Reservoir – associated with Option 122A and Option 423 - see assessment for PP8

Each of the cumulative impacts identified above have undergone a WFD compliance assessment to identify the compliance against the three principle WFD Assessment Objectives. The WFD screening and impact

assessments for the programme-level cumulative assessments are presented in **Appendix C** and **Appendix D**, respectively.

A summary of WFD compliance against each of the water bodies impacted by the Climate Adjustment programme is outlined in **Table 4-6**. Of the water bodies impacted by the Climate Adjustment programme options, four water bodies have been identified as having potentially WFD non-compliant impacts on them, however, these would not be impacted until 2050-51. If this programme was to be selected for progression through the WRMP process, investigations would be advocated into these potential impacts in order to improve the confidence in these assessments in subsequent WRMPs. None of the water bodies have been identified to having certain WFD non-compliance and each could potentially be found compliant through further investigations and operational refinement of the options that impact them.

Six water bodies have uncertain WFD compliance risks associated with options within the Climate Adjustment programme. Of these, two are on the River Derwent and the uncertainty is driven mostly by the change in flow regime on the River Derwent associated with the expansion of the Derwent Valley Reservoirs (Option 6) which is undergoing further investigation through the UDVRE SRO assessment as part of the RAPID Gated process. With the operation of this option set for 2050-51, future iterations of the WRMP can make more confident conclusions of the WFD compliance on these water bodies based on the UDVRE SRO environmental assessments. The other water bodies where uncertain impacts have been identified are also associated with options set to be operational at the same time as the UDVRE option and assessments for these can also be updated in future WRMPs based on the suggested investigations.

Options that are compliant with low and medium confidence have also been identified in the table below and suggestions on how to improve the confidence in these assessments have been outlined.

None of the options in the Climate Adjustment programme for the dWRMP24 would assist any of the progressive WFD Assessment Objectives listed in **Section 2.1.2**.

Table 4-5 Identification of impacts on water bodies associated with the Climate Adjustment programme.

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	429	434	435	523	528	552	556	557
River	GB104028057880 - Derwent from Westend to Wye	✓																									✓																			
	GB104028052390 - Derwent Wye to Amber	✓		✓												✓												✓																			
	GB112068055360 - Biddulph Brook		✓																																												
	GB104028046880 - Soar from Thurlaston Brook to Sence				✓																																									
	GB104028047180 - Trent - R Tame to R Dove					✓																																								
	GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk						✓																																							
	GB104028047190 - River Sow from R Penk to R Trent							✓																																						
	GB112068060460 - Weaver (Marbury Brook to Dane)								✓																																					
	GB104028047360 - Milton Brook Catchment (trib of Trent)									✓																																				
	GB109054039760 - Severn - conf R										✓																														✓							

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	429	434	435	523	528	552	556	557
	Teme to conf R Avon																																													
	GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk												✓																																	
	GB104028042480 - Bourne - source to R Tame													✓																																	
	GB104028042572 - Blythe from Patrick Bridge to R Tame														✓																										✓						
	GB104028052310 - Derwent from Amber to Bottle Brook																																					✓								
	GB104028052770 - Churnet from Meerbrook to Leekbrook																					✓																								
	GB104028047070 - Black Brook from Source to Grace Dieu Brook																								✓																					
	GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk																									✓																					
	GB105031050550 - Eye Brook																												✓																	
	GB109054049880 - Vyrnwy - Lake																														✓																

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	429	434	435	523	528	552	556	557
	Vyrnwy to conf Afon Cownwy																																													
	GB109054049145 - Severn - conf R Worfe to conf R Stour																																	✓													
	GB104028053110 - Trent from Soar to The Beck																																		✓												
	GB109054044140 - Leam - conf R Itchen to conf R Avon																																			✓											
	GB104028047340 - Ramsley Brook from Source to Carr-New Brook																																										✓				
	GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford																																			✓											
Groundwater	GB41202G102900 - Manchester and East Cheshire Carboniferous Aquifers		✓																																											
Groundwater	GB40401G301200 - Tame Anker Mease - PT Sandstone Burton									✓																																				
Groundwater	GB40401G302800 - Soar - PT Sandstone																																										✓				

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	429	434	435	523	528	552	556	557
	GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined																																			✓											
Lake	GB30432299 - Howden Reservoir	✓																									✓																			
Lake	GB30432359 - Derwent Upper Reservoir	✓																									✓																			
Lake	GB30432459 - Ladybower Reservoir	✓																									✓																			
Lake	GB30937864 - Stanford Reservoir												✓																																		
Lake	GB30437497 - Shustoke Reservoirs													✓																																	
Lake	GB30447006 - Carsington Water															✓							✓	✓				✓																			
Lake	GB30433781 - Ogston Reservoir															✓																															
Lake	GB30938250 - Draycote Reservoir																				✓																	✓									
Lake	GB30433790 - Tittesworth Reservoir																					✓																								
Lake	GB30435928 - Blackbrook Reservoir																								✓																					

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	169	187C	190	301B	303C	304	305	309Z	406	420	423	426	429	434	435	523	528	552	556	557
	GB30537182 - Eyebrook Reservoir																												✓																	
	GB30937959 - Trimpley Reservoir																																								✓						

Cumulative								
CA1	CA2	CA3	CA4	CA5	CA6	CA7	CA8	CA9

Table 4-6 Overall WFD compliance of the water bodies impacted by the Climate Adjustment programme

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028057880 - Derwent from Westend to Wye	6 169 (Cumulative CA1)	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoirs and termination of the export from these reservoirs to Yorkshire Water would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. Individually, Option 169 has been assessed as compliant (high confidence) in this water body. The most significant impact here is associated with the Upper Derwent Valley reservoirs expansion (Option 6), which is the subject of a SRO assessment. The outputs from the Gate 2 WFD assessment for this SRO are not available at the time of writing this assessment. With the operation date for this option set for 2050-51, this assessment can be revised with greater confidence in future iterations of the WRMP based on the understanding through these SRO
GB104028052390 - Derwent Wye to Amber	6 29 95B 187C (Cumulative CA2)	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoir would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. It is also unclear how the increase in capacity of the Upper Derwent Valley Reservoirs would impact abstraction from the Ambergate intake within this water body. Investigations are also required to better understand how expanding Carsington Reservoir and Ogston WTW would impact the rates abstracted at Ambergate WTW, noting that the abstraction would be within license and constrained by the existing hands-off flow. Of these options, Option 29 and Option 95B are the only options to be operational within the 25 year planning period. Option 29, which would be operational 2030-31, has been assessed an option-level as compliant with medium confidence with the option leading to only a small flow reduction under high flow conditions. Option 95B, to be operational 2045-46, at an option-level has been assessed as compliant albeit with low confidence. With multiple WRMP cycles between the operation of this option, and Option 6 and Option187C, this assessment can be revised with greater confidence in subsequent WRMPs.
GB112068055360 - Biddulph Brook	22	Compliant (low conf.)	Option 22 would involve abstraction from a groundwater body that is potentially in hydraulic connection with this surface water body. Though it is not expected that there would be significant hydrological change in this water body, this is currently based off limited data. Further research is required into the surface/groundwater interaction in this water body in order to improve confidence in this assessment.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028046880 - Soar from Thurlaston Brook to Sence	31C	Compliant (medium conf.)	Option 31C is a new surface water abstraction from this water body. With this being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are implemented to protect vulnerable river flows.
GB104028047180 - Trent - R Tame to R Dove	31D	Compliant (high conf.)	
GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk	33Z	Compliant (medium conf.)	This option would only lead to a very small reduction in flows in the context of the River Severn. As such, there is no risk of deterioration in this water body associated with Option 33Z. It is worth noting that the CAMS indicates that no water is available for abstraction from this water body.
GB104028047190 - River Sow from R Penk to R Trent	44	Compliant (medium conf.)	Option 44 is a new surface water abstraction from this water body. With this being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are implemented to protect vulnerable river flows.
GB112068060460 - Weaver (Marbury Brook to Dane)	58	Compliant (low conf.)	Option 58 is a new surface water abstraction from this water body. With this 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. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028047360 - Milton Brook Catchment (trib of Trent)	64	Uncertain	Option 64 would involve abstraction from a groundwater body that is potentially in hydraulic connection with this surface water body. There is little hydrological information for Milton Brook therefore it is not possible to estimate the magnitude of hydrological impact and establish the pathway to the impacts on the water quality and biological status elements in this water body. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054039760 - Severn - conf R Teme to conf R Avon	66 429 (Cumulative CA3)	Compliant (low conf.)	These options would each lead to additional surface water abstraction from this water body. The combined abstraction rate is only minor in comparison to the River Severn flows so it is not expected that this would lead to any WFD compliance risks. It is worth noting that there are water quality pressures in the reach and the CAMS indicates that there is no water available for abstraction from this water body.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			The operation of Option 66 is set for 2050-51 and Option 429 is set for 2056-57 which are outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk	84A	Compliant (high conf.)	
GB104028042480 - Bourne - source to R Tame	84B	Uncertain	There is uncertainty over the source water that will be used to supply the expansion of Lower Shustoke Reservoir with the water possibly being abstracted from this water body. With the magnitude of potential abstraction/flow reduction uncertain, it is difficult at this stage to determine the compliance of this water body as a result of Option 84B. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB104028042572 - Blythe from Patrick Bridge to R Tame	84C 435 (Cumulative CA4)	Compliant (high conf.)	
GB104028052310 - Derwent from Amber to Bottle Brook	426	Compliant (med. conf.)	Option 66 would allow increased abstraction from this water body under existing license conditions. This would only be a small hydrological change, insufficient to impact any elements in the water body. It is worth noting that the CAMS indicates that there is no additional water available for abstraction in this water body.
GB104028052770 - Churnet from Meerbrook to Leekbrook	123B	Uncertain	There is uncertainty over how increasing the capacity of Tittesworth Reservoir (Option 123B) would impact the high flow events from the reservoir. This would, in turn, have an impact on the flow regime of the River Churnet. Water resource modelling is recommended to understand how this flow regime may change in order to better assess the potential impacts on the WFD status elements in this water body. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028047070 - Black Brook from Source to Grace Dieu Brook	134A	Compliant (high conf.)	
GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk	143	Compliant (med. conf.)	Option 143 would lead to a reduction in high flows and an increase in low flows in this water body. In the context of the River Severn, these would only be small flow changes and unlikely to impact any of the status elements in the water body. License conditions would need to be implemented to protect vulnerable flows.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB105031050550 - Eye Brook	190	Compliant (high conf.)	
GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	303C	Compliant (med. conf.)	The WFD assessment here is in line with the Gate 2 STT Solution SRO WFD Regulation Compliance assessment of a 25 Ml/d release from the River Vyrnwy. That assessment, appropriate for RAPID Gate 2 identified the release as WFD compliant. It is worth noting that the SRO assessment uses an operational regime that is based on the demand from the Water Resources South East region which is likely to differ from that of Severn Trent's so the option assessment is not directly transferrable from the STT assessment.
GB109054049145 - Severn - conf R Worfe to conf R Stour	309Z	Compliant (high conf.)	
GB104028053110 - Trent from Soar to The Beck	406	Compliant (high conf.)	
GB109054044140 - Leam - conf R Itchen to conf R Avon	420	Non-compliant (low conf.)	Option 420 has the potential to increase abstraction from this water body, within existing license, of which is indicated as having no water available for abstraction according to the CAMS. The source and increase in abstraction is unclear however there could be a significant reduction in flows in this water body, potentially exacerbating the flow pressure identified through the CAMS. This has the potential to cause deterioration in the biological status elements. There is the potential for the introduction of an impediment to Good macrophyte status with this currently at Poor status There are also water quality pressures in this water body and there could be deterioration/impediment to Good status in physico-chemical status elements, most notably phosphate. With this option set for operation in 2059-60, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB104028047340 - Ramsley Brook from Source to Carr-New Brook	528	Uncertain	This water body has the potential to be impacted by the groundwater abstraction associated with Option 528. There is little known about both the surface water/groundwater interaction and the baseline flows in this water body. Further investigation into these is required to enable the impact on this water body to be assessed with confidence. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford	420	Compliant (high conf.)	

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB41202G102900 - Manchester and East Cheshire Carboniferous Aquifers	22	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 22. This has found potential non-compliance against the ground water dependent terrestrial ecosystem (GWDTE) test, water balance test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on the Biddulph Brook (GB112068055360) water body that, although assessed as compliant (low confidence), would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40401G301200 - Tame Anker Mease - PT Sandstone Burton	64	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 64. This has found potential non-compliance against the GWDTE test, water balance test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on the Milton Brook Catchment (trib of Trent) (GB104028047360) water body that would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40401G302800 - Soar - PT Sandstone	528	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 528. This has found potential non-compliance against the GWDTE test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on Ramsley Brook from Source to Carr-New Brook (GB104028047340) water body that would likely require further assessment to improve confidence in the assessment.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined	420	Compliant (high conf.)	
GB30432299 - Howden Reservoir	6 169 (Cumulative CA5)	Compliant (high conf.)	
GB30432359 - Derwent Upper Reservoir	6 169 (Cumulative CA6)	Compliant (high conf.)	
GB30432459 - Ladybower Reservoir	6 169 (Cumulative CA7)	Compliant (high conf.)	
GB30937864 - Stanford Reservoir	84A	Compliant (high conf.)	
GB30437497 - Shustoke Reservoirs	84B	Compliant (high conf.)	
GB30447006 - Carsington Water	95B 128 128Z 190 (Cumulative CA8)	Compliant (high conf.)	
GB30433781 - Ogston Reservoir	95B	Compliant	

Water body	Option(s) impacting water body	WFD compliance summary	Summary
		(high conf.)	
GB30938250 - Draycote Reservoir	122A 423 (Cumulative CA9)	Compliant (high conf.)	
GB30433790 - Tittesworth Reservoir	123B	Compliant (high conf.)	
GB30435928 - Blackbrook Reservoir	134A	Compliant (high conf.)	
GB30537182 - Eyebrook Reservoir	190	Compliant (high conf.)	
GB30937959 - Trimpley Reservoir	434	Compliant (high conf.)	

4.6 GATED SUCCESS

To ensure a robust optioneering process to determine the preferred programme, a series of alternative programmes have been assessed as part of the draft WRMP. The Gated Success programme is one of these programmes and the supply-side options, and their implantation dates, that are included this programme are as follows:

- 29 Homesford WTW capacity increase 2030-31
- 33Z Shelton WTW Expansion 2030-31
- 66 Strensham WTW Expansion 2030-31
- 122A Draycote Reservoir WL increase (6%) 2030-31
- 128 Carsington to Tittesworth main (large) 2030-31
- 303C UU release from Vyrnwy (25 Ml/d) 2030-31
- 305 Heathy Lea to North Notts transfer 2030-31
- 426 Little Eaton WTW DO Recovery 2030-31
- 434 Trimpley WTW DO Recovery 2030-31
- 435 Whitacre WTW DO Recovery 2030-31
- 103 Mardy Support Link 2035-36
- 301B UU import from Llanforda to Shelton (large) 2040-41
- 44 New R Sow abstraction and WTW near Stafford 2045-46
- 95B Ogston WTW Expansion 2045-46
- 6 Upper Derwent Valley Reservoir Expansion (UDVRE) 2050-51
- 22 Recommission Elmhurst GW source 2050-51
- 31C E. Midlands Raw Water Storage (CQ) 2050-51
- 58 River Weaver to New WTW at Stoke 2050-51
- 64 Rehabilitation Milton GW Source 2050-51
- 79A Wolves-Bham Strategic Link Main (large) 2050-51
- 84A Stanford Minor Dam Extension (84A) 2050-51
- 84B Lower Shustoke Minor Dam Extension (84B) 2050-51
- 84C Whitacre Minor Dam Extension (84C) 2050-51
- 105 Ruyton Support Link 2050-51
- 117 Peckforton Bulk Import from UU 2050-51
- 123B Raise Dam at Tittesworth Reservoir (25%) 2050-51
- 128Z Carsington to Tittesworth main (small) 2050-51
- 143 W.Midlands Raw Water Storage 2050-51
- 190 Third party reservoir and new WTW's 2050-51
- 303A UU release from Vyrnwy (75 Ml/d) 2050-51
- 304 Ambergate to Mid-Notts transfer 2050-51
- 309Z Transfer from Hampton Loade WTW to Nurton DSR (small) 2050-51
- 406 New abstraction and WTW on River Trent 2050-51
- 423 Draycote WTW DO Recovery 2050-51
- 523 UU Mow Cop BH Treated water import 2050-51
- 528 New GW Source Soar - PT Sandstone nr Coalville 2050-51
- 552 UU Bearstone treated water Import 2050-51
- 557 ASL Capacity Increase - Oldbury to Meriden 2050-51
- 134A Blackbrook reservoir to Cropston WTW 2057-58

- 420 Campion Hills WTW DO Recovery 2059-60
- 31D E. Midlands Raw Water Storage (CHQ) 2060-61
- 101 Kinsall Additional Resource (UU import) 2062-63
- 187C Expand Carsington Reservoir (25000 Ml) 2067-68

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

Of the Gated Success programme of options, none would be operational within the next AMP cycle (AMP8), 14 would be operational within the 25 year planning period and 29 would be operational at a date later than the 25 year planning period.

The option-level WFD assessment identified four options to be potentially non-compliant with a low confidence rating. Three options have been identified as having uncertain WFD compliance and five options have also been identified as being compliant with a low confidence rating. The remaining 31 options have been assessed as WFD compliant with a medium or high confidence rating.

Table 4-7 displays the options that make up the Gated Success programme and identifies those water bodies assessed for each option. Water bodies that are potentially impacted by multiple options (as informed through the option-level assessment) have been highlighted for a cumulative assessment. In total there are five water bodies identified for cumulative assessment (See **Appendix C**):

- Cumulative GS1 - GB104028052390 - Derwent Wye to Amber – associated with Option 6, Option 29, Option 95B and Option 187C – see assessment for PP2
- Cumulative GS2 - GB104028042572 - Blythe from Patrick Bridge to R Tame – associated with Option 84C and Option 435 – see assessment for PP3
- Cumulative GS3 - GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy – associated with Option 303A and 303C
- Cumulative GS4 - GB30447006 - Carsington Water – associated with Option 95, Option 128, Option 128Z and Option 187C – see assessment for PP7
- Cumulative GS5 - GB30938250 - Draycote Reservoir – associated with Option 122A and Option 423 – see assessment for PP8

Each of the cumulative impacts identified above have undergone a WFD compliance assessment to identify the compliance against the three principle WFD Assessment Objectives. The WFD screening and impact assessments for the programme-level cumulative assessments are presented in **Appendix C** and **Appendix D**, respectively.

A summary of WFD compliance against each of the water bodies impacted by the Gated Success programme is outlined in **Table 4-8**. Of the water bodies impacted by the Gated Success programme options, four water bodies have been identified as having potentially WFD non-compliant impacts on them, however, these would not be impacted until 2050-51. If this programme was to be selected for progression through the WRMP process, investigations would be advocated into these potential impacts in order to improve the confidence in these assessments in subsequent WRMPs. None of the water bodies have been identified to having certain WFD non-compliance and each could potentially be found compliant through further investigations and operational refinement of the options that impact them.

Seven water bodies have uncertain WFD compliance risks associated with options within the preferred programme. Of these, two are on the River Derwent and the uncertainty is driven mostly by the change in flow regime on the River Derwent associated with the expansion of the Derwent Valley Reservoirs (Option 6) which is undergoing further investigation through the UDVRE SRO assessment as part of the RAPID Gated process. With the operation of this option set for 2050-51, future iterations of the WRMP can make more confident conclusions of the WFD compliance on these water bodies based on the UDVRE SRO environmental assessments. The other water bodies where uncertain impacts have been identified are also associated with options set to be operational at the same time as the UDVRE option and assessments for these can also be updated in future WRMPs based on the suggested investigations.

Options that are compliant with low and medium confidence have also been identified in the table below and suggestions on how to improve the confidence in these assessments have been outlined.

None of the options in the Gated Success programme for the dWRMP24 would assist any of the progressive WFD Assessment Objectives listed in **Section 2.1.2**.

Table 4-7 Identification of impacts on water bodies associated with the Gated Success programme.

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	187C	190	301B	303A	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
River	GB104028057880 - Derwent from Westend to Wye	✓																																										
	GB104028052390 - Derwent Wye to Amber	✓		✓												✓											✓																		
	GB112068055360 - Biddulph Brook		✓																																									
	GB104028046880 - Soar from Thurlaston Brook to Sence				✓																																							
	GB104028047180 - Trent - R Tame to R Dove					✓																																						
	GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk						✓																																					
	GB104028047190 - River Sow from R Penk to R Trent							✓																																				
	GB112068060460 - Weaver (Marbury Brook to Dane)								✓																																			
	GB104028047360 - Milton Brook Catchment (trib of Trent)									✓																																		
	GB109054039760 - Severn - conf R										✓																																	

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	187C	190	301B	303A	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
	Teme to conf R Avon																																											
	GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk												✓																																
	GB104028042480 - Bourne - source to R Tame													✓																															
	GB104028042572 - Blythe from Patrick Bridge to R Tame														✓																									✓					
	GB104028052310 - Derwent from Amber to Bottle Brook																																					✓						
	GB104028052770 - Churnet from Meerbrook to Leekbrook																					✓																						
	GB104028047070 - Black Brook from Source to Grace Dieu Brook																								✓																				
	GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk																									✓																				
	GB105031050550 - Eye Brook																											✓																
	GB109054049880 - Vyrnwy - Lake																													✓	✓														

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	187C	190	301B	303A	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
	Vyrnwy to conf Afon Cownwy																																											
	GB109054049145 - Severn - conf R Worfe to conf R Stour																																	✓										
	GB104028053110 - Trent from Soar to The Beck																																		✓									
	GB109054044140 - Leam - conf R Itchen to conf R Avon																																			✓								
	GB104028047340 - Ramsley Brook from Source to Carr-New Brook																																									✓		
	GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford																																			✓								
Groundwater	GB41202G102900 - Manchester and East Cheshire Carboniferous Aquifers		✓																																									
Groundwater	GB40401G301200 - Tame Anker Mease - PT Sandstone Burton									✓																																		
Groundwater	GB40401G302800 - Soar - PT Sandstone																																									✓		

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	187C	190	301B	303A	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
	GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined																																			✓									
Lake	GB30432299 - Howden Reservoir	✓																																											
Lake	GB30432359 - Derwent Upper Reservoir	✓																																											
Lake	GB30432459 - Ladybower Reservoir	✓																																											
Lake	GB30937864 - Stanford Reservoir												✓																																	
Lake	GB30437497 - Shustoke Reservoirs													✓																																
Lake	GB30447006 - Carsington Water															✓							✓	✓			✓																			
Lake	GB30433781 - Ogston Reservoir															✓																														
Lake	GB30938250 - Draycote Reservoir																				✓																	✓								
Lake	GB30433790 - Tittesworth Reservoir																					✓																							
Lake	GB30435928 - Blackbrook Reservoir																								✓																					

WFD water body Type	ID & Name	6	22	29	31C	31D	33Z	44	58	64	66	79A	84A	84B	84C	95B	101	103	105	117	122A	123B	128	128Z	134A	143	187C	190	301B	303A	303C	304	305	309Z	406	420	423	426	434	435	523	528	552	557
	GB30537182 - Eyebrook Reservoir																											✓																
	GB30937959 - Trimpley Reservoir																																						✓					

Cumulative				
GS1	GS2	GS3	GS4	GS5

Table 4-8 Overall WFD compliance of the water bodies impacted by the Gated Success programme.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB104028057880 - Derwent from Westend to Wye	6	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoirs would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. The Upper Derwent Valley reservoirs expansion (Option 6) is the subject of a SRO assessment. The outputs from the Gate 2 WFD assessment for this SRO are not available at the time of writing this assessment. With the operation date for this option set for 2050-51, this assessment can be revised with greater confidence in future iterations of the WRMP based on the understanding through these SRO
GB104028052390 - Derwent Wye to Amber	6 29 95B 187C (Cumulative GS1)	Uncertain	There is uncertainty over how the expansion of the Upper Derwent Valley reservoir would impact the high flow regime from Ladybower Reservoir to the River Derwent. Further investigations are required into the extent of flow change and frequency of this change in order to determine impact of these options on the biological status elements in this water body. It is also unclear how the increase in capacity of the Upper Derwent Valley Reservoirs would impact abstraction from the Ambergate intake within this water body. Investigations are also required to better understand how expanding Carsington Reservoir and Ogston WTW would impact the rates abstracted at Ambergate WTW, noting that the abstraction would be within license and constrained by the existing hands-off flow. Of these options, Option 29 and Option 95B are the only options to be operational within the 25 year planning period. Option 29, which would be operational 2030-31, has been assessed an option-level as compliant with medium confidence with the option leading to only a small flow reduction under high flow conditions. Option 95B, to be operational 2045-46, at an option-level has been assessed as compliant albeit with low confidence. With multiple WRMP cycles between the operation of this option, and Option 6 and Option187C, this assessment can be revised with greater confidence in subsequent WRMPs.
GB112068055360 - Biddulph Brook	22	Compliant (low conf.)	Option 22 would involve abstraction from a groundwater body that is potentially in hydraulic connection with this surface water body. Though it is not expected that there would be significant hydrological change in this water body, this is currently based off limited data. Further research is required into the surface/groundwater interaction in this water body in order to improve confidence in this assessment.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028046880 - Soar from Thurlaston Brook to Sence	31C	Compliant (medium conf.)	Option 31C is a new surface water abstraction from this water body. With this being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are implemented to protect vulnerable river flows.
GB104028047180 - Trent - R Tame to R Dove	31D	Compliant (high conf.)	
GB109054049142 - Severn - conf Bele Bk to conf Sundorne Bk	33Z	Compliant (medium conf.)	This option would only lead to a very small reduction in flows in the context of the River Severn. As such, there is no risk of deterioration in this water body associated with Option 33Z. It is worth noting that the CAMS indicates that no water is available for abstraction from this water body.
GB104028047190 - River Sow from R Penk to R Trent	44	Compliant (medium conf.)	Option 44 is a new surface water abstraction from this water body. With this being a new abstraction, there is no risk to WFD compliance assuming suitable license conditions are implemented to protect vulnerable river flows.
GB112068060460 - Weaver (Marbury Brook to Dane)	58	Compliant (low conf.)	Option 58 is a new surface water abstraction from this water body. With this 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. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028047360 - Milton Brook Catchment (trib of Trent)	64	Uncertain	Option 64 would involve abstraction from a groundwater body that is potentially in hydraulic connection with this surface water body. There is little hydrological information for Milton Brook therefore it is not possible to estimate the magnitude of hydrological impact and establish the pathway to the impacts on the water quality and biological status elements in this water body. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054039760 - Severn - conf R Teme to conf R Avon	66	Compliant (low conf.)	Option 66 is a new surface water abstraction from this water body. The abstraction rate is only minor in comparison to the River Severn flows so it is not expected that this would lead to any WFD compliance risks. It is worth noting that there are water quality pressures in the water body and the CAMS indicates that there is no water available for abstraction from this water body.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB109054043930 - Avon (Warks) - source to Claycoton-Yelvertoft Bk	84A	Compliant (high conf.)	
GB104028042480 - Bourne - source to R Tame	84B	Uncertain	There is uncertainty over the source water that will be used to supply the expansion of Lower Shustoke Reservoir with the water possibly being abstracted from this water body. With the magnitude of potential abstraction/flow reduction uncertain, it is difficult at this stage to determine the compliance of this water body as a result of Option 84B. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB104028042572 - Blythe from Patrick Bridge to R Tame	84C 435 (Cumulative GS2)	Compliant (high conf.)	
GB104028052310 - Derwent from Amber to Bottle Brook	426	Compliant (med. conf.)	Option 66 would allow increased abstraction from this water body under existing license conditions. This would only be a small hydrological change, insufficient to impact any elements in the water body. It is worth noting that the CAMS indicates that there is no additional water available for abstraction in this water body.
GB104028052770 - Churnet from Meerbrook to Leekbrook	123B	Uncertain	There is uncertainty over how increasing the capacity of Tittesworth Reservoir (Option 123B) would impact the high flow events from the reservoir. This would, in turn, have an impact on the flow regime of the River Churnet. Water resource modelling is recommended to understand how this flow regime may change in order to better assess the potential impacts on the WFD status elements in this water body. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available from further research.
GB104028047070 - Black Brook from Source to Grace Dieu Brook	134A	Compliant (high conf.)	

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB109054049141 - Severn - Sundorne Bk to conf M Wenlock-Farley Bk	143	Compliant (med. conf.)	Option 143 would lead to a reduction in high flows and an increase in low flows in this water body. In the context of the River Severn, these would only be small flow changes and unlikely to impact any of the status elements in the water body. License conditions would need to be implemented to protect vulnerable flows.
GB105031050550 - Eye Brook	190	Compliant (high conf.)	
GB109054049880 - Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	303A 303C (Cumulative GS3)	Uncertain	The WFD assessment for 303C, which is operational first (2030-31) in this programme is in line with the Gate 2 STT Solution SRO WFD Regulation Compliance assessment of a 25 Ml/d release from the River Vyrnwy. That assessment, appropriate for RAPID Gate 2 identified the release as WFD compliant. It is worth noting that the SRO assessment uses an operational regime that is based on the demand from the Water Resources South East region which is likely to differ from that of Severn Trent's so the option assessment is not directly transferrable from the STT assessment. Though not reported at Gate 2, the STT investigations have also found that a 75Ml/d release from the River Vyrnwy would not lead to significant hydrological changes. It is worth noting that this release would be considered compliant if it was made in addition to the compensation release only. It would be considered non-compliant if this release was made along with the Severn Regulation releases that are also made from Vyrnwy Reservoir. It is unclear, how these options would be implemented cumulatively. An operation regime would be needed to determine the hydrological impact of these options. With the cumulative impact not set to be introduced until 2050-51 (the operation date for 303A), this assessment can be revised in subsequent WRMPs based on a better understanding of the operational regime of these options cumulatively.
GB109054049145 - Severn - conf R Worfe to conf R Stour	309Z	Compliant (high conf.)	
GB104028053110 - Trent from Soar to The Beck	406	Compliant (high conf.)	
GB109054044140 - Leam - conf R Itchen to conf R Avon	420	Non-compliant (low conf.)	Option 420 has the potential to increase abstraction from this water body, within existing license, of which is indicated as having no water available for abstraction according to the CAMS. The source and increase in abstraction is unclear however there could be a significant reduction in flows in this water body, potentially exacerbating the flow pressure identified through the CAMS. This has the potential to cause deterioration in the biological status elements. There is the potential for the introduction of an impediment to Good macrophyte status with this currently at Poor status There are also water quality pressures in this water body and there could be

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			deterioration/impediment to Good status in physico-chemical status elements, most notably phosphate. With this option set for operation in 2059-60, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB104028047340 - Ramsley Brook from Source to Carr-New Brook	528	Uncertain	This water body has the potential to be impacted by the groundwater abstraction associated with Option 528. There is little known about both the surface water/groundwater interaction and the baseline flows in this water body. Further investigation into these is required to enable the impact on this water body to be assessed with confidence. The operation of this option is set for 2050-51 which is outside of the 25 year planning period. This assessment can be updated in subsequent WRMPs, taking into account information available and an advanced operational understanding.
GB109054044402 - Avon (Wark) conf R Leam to Tramway Br, Stratford	420	Compliant (high conf.)	
GB41202G102900 - Manchester and East Cheshire Carboniferous Aquifers	22	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 22. This has found potential non-compliance against the ground water dependent terrestrial ecosystem (GWDTE) test, water balance test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on the Biddulph Brook (GB112068055360) water body that, although assessed as compliant (low confidence), would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40401G301200 - Tame Anker Mease - PT Sandstone Burton	64	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 64. This has found potential non-compliance against the GWDTE test, water balance test and overall chemical status in this water body as a result of the additional abstraction.

Water body	Option(s) impacting water body	WFD compliance summary	Summary
			There are also potential impacts on the Milton Brook Catchment (trib of Trent) (GB104028047360) water body that would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs, the water balance of the water body and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40401G302800 - Soar - PT Sandstone	528	Non-compliant (low conf.)	The assessment on this water body is related to additional groundwater abstraction associated with Option 528. This has found potential non-compliance against the GWDTE test and overall chemical status in this water body as a result of the additional abstraction. There are also potential impacts on Ramsley Brook from Source to Carr-New Brook (GB104028047340) water body that would likely require further assessment to improve confidence in the assessment. This assessment is based on limited information and is precautionary. With further investigations into the connectivity of this water body to surface water bodies and any GWDTEs and the pollution pressures in the water body, more confidence can be applied to the assessment. It is possible that, with this additional research, the option would be compliant in this water body. With this option set for operation in 2050-51, outside of this planning period, there are likely to be significant changes to the baseline in which the WFD assessment is tested against when the option is operational. There are several WRMP cycles prior to this operation date in which this assessment can be reviewed with increased confidence.
GB40901G300700 - Warwickshire Avon - PT Sandstone Warwick/Avon Confined	420	Compliant (high conf.)	
GB30432299 - Howden Reservoir	6	Compliant (high conf.)	
GB30432359 - Derwent Upper Reservoir	6	Compliant (high conf.)	

Water body	Option(s) impacting water body	WFD compliance summary	Summary
GB30432459 - Ladybower Reservoir	6	Compliant (high conf.)	
GB30937864 - Stanford Reservoir	84A	Compliant (high conf.)	
GB30437497 - Shustoke Reservoirs	84B	Compliant (high conf.)	
GB30447006 - Carsington Water	95B 128 128Z 190 (Cumulative GS4)	Compliant (high conf.)	
GB30433781 - Ogston Reservoir	95B	Compliant (high conf.)	
GB30938250 - Draycote Reservoir	122A 423 (Cumulative GS5)	Compliant (high conf.)	
GB30433790 - Tittesworth Reservoir	123B	Compliant (high conf.)	
GB30435928 - Blackbrook Reservoir	134A	Compliant (high conf.)	
GB30537182 - Eyebrook Reservoir	190	Compliant (high conf.)	
GB30937959 - Trimpley Reservoir	434	Compliant (high conf.)	

5. PREFERRED DRAFT WRMP (STAGE 3) WFD ASSESSMENT IN COMPARISON TO OTHER PLANS AND PROJECTS

Using the WFD compliance assessment of the preferred programme presented in **Section 4.1**, this section provides an overview of the WFD compliance for Severn Trent's draft WRMP in combination with other water companies draft WRMPs.

A comparison against the preferred programmes for the draft WRMP24 of water companies within the Water Resources West regional group has identified that none of the water bodies that are impacted by the Severn Trent draft WRMP24 are impacted by any of the other WRW water companies' draft WRMP24. As a result, no water bodies need further assessment based on a cumulative impact of options between these water companies. Currently no water companies have published their draft WRMP24 so this section will be updated once these are available. Particularly, options in the Water Resources East water companies need further consideration with their operational area potentially overlapping with areas impacted in Severn Trent's preferred programme.

6. WFD COMPLIANCE SUMMARY OF THE SEVERN TRENT DRAFT WRMP24

This report has set out the WFD Regulations compliance assessment of Severn Trent's draft WRMP24 preferred programme.

Table 6-1 provides a summary of the WFD compliance of the Severn Trent draft WRMP24 preferred programme 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). Only one water body, Vyrnwy - Lake Vyrnwy to conf Afon Cownwy (GB109054049880), is impacted by the options in the preferred programme (Option 303C).

The programme level assessment in **Section 4.1** identified that the preferred programme for the draft WRMP24 includes 43 supply options, each of which and collectively have been the subject of this assessment. Four of these options have been found to be potentially non-compliant with a low confidence rating. The operation date of these options, which are each 2050-51, means that these assessments can be updated in future iterations of the WRMP based on further investigations that have been advocated through this report. Through further investigations, these options could be potentially found to be WFD compliant.

Six water bodies have uncertain WFD compliance risks associated with options within the preferred plan. Of these, two are on the River Derwent and the uncertainty is driven mostly by the change in flow regime on the River Derwent associated with the expansion of the Derwent Valley Reservoirs (Option 6) which is undergoing further investigation through the UDVRE SRO assessment as part of the RAPID Gated process. With the operation of this option also set for 2050-51, future iterations of the WRMP can make more confident conclusions of the WFD compliance on these water bodies based on the UDVRE SRO environmental assessments. The other water bodies where uncertain impacts have been identified are also associated with options set to be operational at the same time as the UDVRE option and assessments for these can also be updated in future WRMPs based on the suggested investigations and improved option design.

None of the options within the preferred plan have been identified as assisting with any of the progressive WFD Assessment Objectives except for Assessment Objective 7 which would be assisted through demand management options promoting the sustainable use of water.

Table 6-1 Summary of plan level WFD compliance for the Severn Trent draft WRMP24

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 that have been assessed as potentially non-compliant against this WFD Assessment Objective. It is worth noting that these assessments are low confidence. There are also options contained within the draft WRMP preferred programme that have been assessed as uncertain or compliant with a low confidence rating that require further design information and investigation to improve confidence on their impact.
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 that have been assessed as potentially non-compliant against this WFD Assessment Objective. It is worth noting that these assessments are low confidence. There are also options contained within the draft WRMP preferred programme that have been assessed as uncertain or compliant with a low confidence rating that require further design

WFD Assessment Objective	Summary of WFD compliance	Explanation
		information investigation to improve confidence on their impact.
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 the Severn Trent draft WRMP24 Preferred Plan have been assessed as having the potential to compromise any planned programme of water body measures as set out in RBMP2.
4) To assist the attainment of the WFD objectives for the water body – in line with Regulation 13(2)b and 13(2)c	Does not assist attainment	None of the options contained within the Severn Trent draft WRMP24 preferred programme would help attain the WFD objectives for any water bodies or WFD protected areas.
5) To assist the attainment of the WFD objectives for associated WFD protected areas – in line with Regulation 13(6)	Does not assist 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	Does not assist the attainment	None of the options contained within the Severn Trent draft WRMP24 preferred programme would reduce or phase out the release of individual pollutants or groups of pollutants.
7) To promote the sustainable use of water as a natural resource	Does assist the attainment	The demand management options, though not assessed through the WFD compliance assessment, would aid in the sustainable use of water as a natural resource with less demand needed to be met with the abstraction of water from the environment.
8) To conserve habitats and species that depend directly on water	Does not assist the attainment	None of the options that impact water bodies in Wales help 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	Does not assist the attainment	None of the options that impact water bodies in Wales help 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	Does not assist the attainment	None of the options that impact water bodies in Wales help 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	Does not assist the attainment	None of the options that impact water bodies in Wales contribute to mitigating the effects of floods and droughts.

APPENDICES

Appendix A: Option-level screening

This appendix presents the results of the WFD compliance assessment screening outcomes (methodological Step 1 and Step 2) for all of the options included in the feasible list and indicates whether they were screened in for an impact assessment (methodological Step 3) based on the potential risk of deterioration of WFD status. Where an option 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 A1**. The impact assessment for the options and water bodies scoped in for further assessment are presented in **Appendix B**.

Catchment management options and distribution management options have been screened out for WFD compliance assessment; these options may have beneficial effects on WFD objectives by improving the local water environment through land-use management and reducing the growth in demand for water.

Table A-1 Option-level WFD screening outcomes

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Derwent Valley Transfer Main	5	Howden Reservoir	GB30432299	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoirs and downstream water bodies associated with this option. The option includes abstraction from reservoirs. Carsington reservoir and the Derwent Reservoirs are heavily modified water bodies designed for a variable water level. As such changes in abstraction from the reservoirs would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoirs due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Derwent Upper Reservoir	GB30432359	Lake		
		Ladybower Reservoir	GB30432459	Lake		
		Derwent from Westend to Wye	GB104028057880	River		
		Derwent Wye to Amber	GB104028052390	River		
		Carsington Water	GB30447006	Lake		
Upper Derwent Valley Reservoir Expansion (UDVRE)	6	Howden Reservoir	GB30432299	Lake	No	N/A
		Derwent Upper Reservoir	GB30432359	Lake		
		Ladybower Reservoir	GB30432459	Lake		
		Derwent from Westend to Wye	GB104028057880	River		
		Derwent Wye to Amber	GB104028052390	River		
Recommission Elmhurst GW source	22	Manchester and East Cheshire Carboniferous Aquifers	GB41202G102900	Groundwater	No	N/A
		Biddulph Brook	GB112068055360	River		
Homesford WTW capacity increase	29	Derwent from Wye to Amber	GB104028052390	River	No	N/A
E. Midlands Raw Water Storage (CQ)	31C	Soar from Thurlaston Brook to Sence	GB104028046880	River	No	N/A

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
E. Midlands Raw Water Storage (CHQ)	31D	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 this option. The HOF condition of 2650Ml/d at North Muskham will protect Q95 flows. In Q70 conditions there would be a flow reduction of 2% and the CAMS indicates that there is water available for abstraction in this catchment.
Little Eaton Expansion (supported by Carsington Reservoir)	32	Carsington Water	GB30447006	Lake	No	N/A
		Derwent from Amber to Bottle Brook	GB104028052310	River		
Shelton WTW Expansion	33Z	Severn - conf Bele Bk to conf Sundorne Bk	GB109054049142	River	No	N/A
Minworth effluent re-use (Large scheme)	38	Tame - R Rea to R Blythe	GB104028046841	River	No	N/A
		Tame from R Blythe to River Anker	GB104028046440	River		
		Tame from River Anker to River Trent	GB104028047050	River		
		Trent - R Tame to R Dove	GB104028047180	River		
		Trent from Dove to Derwent	GB104028047420	River		
		Trent from Derwent to Soar	GB104028053120	River		
Minworth effluent re-use (Medium scheme)	39	Tame - R Rea to R Blythe	GB104028046841	River	No	N/A
		Tame from R Blythe to River Anker	GB104028046440	River		

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
New R Sow abstraction and WTW near Stafford	44	River Sow from R Penk to R Trent	GB104028047190	River	No	N/A
River Soar to Cropston WTW	54	River Soar from Rothley Brook to Long Whatton Brook	GB104028047211	River	No	N/A
River Weaver to New WTW at Stoke	58	Weaver (Marbury Brook to Dane)	GB112068060460	River	No	N/A
Rehabilitation Milton GW Source	64	Tame Anker Mease - PT Sandstone Burton	GB40401G301200	Groundwater	No	N/A
		Milton Brook Catchment (trib of Trent)	GB104028047360	River		
Strensham WTW Expansion	66	Severn - conf R Teme to conf R Avon	GB109054039760	River	No	N/A
Wolves-Bham Strategic Link Main (large)	79A	N/A	N/A	N/A	Yes	This option involves the transfer of treated water in the network. As this is assumed, there will only be minor changes to the operational pattern of abstractions. On this basis, there is negligible risk of WFD deterioration.
Wolves-Bham Strategic Link Main (small)	79B	N/A	N/A	N/A	Yes	This option involves the transfer of treated water in the network. As this is assumed, there will only be minor changes to the operational pattern of abstractions. On this basis, there is negligible risk of WFD deterioration.
Stanford Minor Dam Extension (84A)	84A	Stanford Reservoir	GB30937864	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes the expansion of a reservoir. Stanford Reservoir is a heavily modified water body designed for a variable water level. As such changes in the level of the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoirs

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
		Avon (Warks) - source to Claycoton-Yelvertoft Bk	GB109054043930	River		due to changes in spill pattern; however, a hydrologist has identified that flows downstream of the reservoir are independent of the reservoir spill regime therefore there is expected to be a negligible hydrological impact on the downstream water course. The CAMS assessment indicates that there is water available for abstraction in this catchment under all flow conditions (Q95,Q70,Q50,Q30).
Lower Shustoke Minor Dam Extension (84B)	84B	Shustoke Reservoirs	GB30437497	Lake	No	N/A
		Bourne - source to R Tame	GB104028042480	River		
Whitacre Minor Dam Extension (84C)	84C	Blythe from Patrick Bridge to R Tame	GB104028042572	River	Yes	This option includes the expansion of a reservoir. Whitacre Reservoir is an offline reservoir and is not listed as a WFD water body, therefore, any hydrological impacts on this reservoir are irrelevant. There may be a small amount of additional abstraction from the surrounding catchment under high flows to supplement the increase in reservoir catchment. The CAMS indicates that there is water available for abstraction from the Tame, therefore, only minor/negligible hydrological impacts are expected. It is worth noting that the assessment of WFD compliance is based on the assumption that the additional abstraction sourced from the Tame intake, where there is water available for abstraction, rather than the Bourne intake.
River Weaver to Tittesworth WTW	88	Weaver (Dane to Frodsham)	GB112068060500	River	No	N/A
		Weaver (Marbury Brook to Dane)	GB112068060460	River		
Ogston WTW Expansion	95B	Carsington Water	GB30447006	Lake	No	N/A
		Derwent Wye to Amber	GB104028052390	River		

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
		Ogston Reservoir	GB30433781	Lake		
Kinsall Additional Resource (UU import)	101	N/A	N/A	N/A	Yes	This scheme involves a network transfer with no new abstractions or discharge to WFD water bodies. As a result, there is a negligible risk to WFD compliance.
Mardy Support Link	103	N/A	N/A	N/A	Yes	The scheme does not involve any additional abstractions or discharges. As a result, there is a negligible risk to WFD compliance.
Newark Support Link	104	N/A	N/A	N/A	Yes	The scheme involves an interzonal transfer. It is assumed that that no increase in abstraction is required and that that transfer will be a network one. As a result, there is a negligible risk to WFD compliance.
Ruyton Support Link	105	N/A	N/A	N/A	Yes	This scheme involves a network transfer with no new abstractions or discharge to WFD water bodies. As a result, there is a negligible risk to WFD compliance.
Stoke to Stafford link main	108	Staffordshire Trent Valley - PT Sandstone Staffordshire	GB40401G300500	Groundwater	Yes	This scheme involves a network transfer with no new abstractions or discharge to WFD water bodies. As a result, there is a negligible risk to WFD compliance.
		Trent from Tittensor to River Sow	GB104028053272	River		
Wolves to Stafford link main	110	N/A	N/A	N/A	Yes	This option is to transfer potable water between two WRZs with no new abstractions or discharge to WFD water bodies. As a result, there is a negligible risk to WFD compliance.
Melbourne to Staffs link main	111	N/A	N/A	N/A	Yes	This option is to transfer potable water between two WRZs with no new abstractions or discharge to WFD water bodies. As a result, there is a negligible risk to WFD compliance.
Croxton GW to Hob Hill DSR	112	Staffordshire Trent Valley - PT Sandstone Bishops Wood	GB40401G300200	Groundwater	No	N/A
		Sow from Source to Brockton Brook	GB104028052990	River		

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Peckforton Bulk Import from UU	117	N/A	N/A	N/A	Yes	This option involves the import of potable water from a United Utilities. This water will be sourced from United Utilities existing supply or from a scheme in United Utilities WRMP. As such there are no operational impacts associated with this option.
River Severn to Draycote	120	Draycote Reservoir	GB30938250	Lake	No	N/A
		Severn - conf R Worfe to conf R Stour	GB109054049145	River		
		Tame - R Rea to R Blythe	GB104028046841	River		
		Tame from R Blythe to River Anker	GB104028046440	River		
		Tame from River Anker to River Trent	GB104028047050	River		
		Trent - R Tame to R Dove	GB104028047180	River		
		Trent from Dove to Derwent	GB104028047420	River		
		Trent from Derwent to Soar	GB104028053120	River		
		Avon (Warks) - conf R Sowe to conf R Leam	GB109054043840	River		
		Avon (Wark) conf R Leam to Tramway Br, Stratford	GB109054044402	River		
		Avon- Tramway Br Stratford to Workman Br Evesham	GB109054044401	River		
Mythe to Mitcheldean main	121	Severn - conf R Teme to conf R Avon	GB109054039760	River	No	N/A

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Draycote Reservoir WL increase (6%)	122A	Draycote Reservoir	GB30938250	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. This option includes the expansion of a reservoir. Draycote Reservoir is a heavily modified water body designed for a variable water level. As such changes in the water level of the reservoir would not impact on the in-reservoir environment. There are unlikely to be any impacts on the downstream water bodies as Draycote Reservoir only has a small catchment area and the only outflow is compensation flow which will remain unchanged by this option.
Draycote Reservoir WL increase (25%)	122B	Draycote Reservoir	GB30938250	Lake	No	N/A
		Leam - conf R Itchen to conf R Avon	GB109054044140	River		
Draycote Reservoir WL increase (50%)	122C	Draycote Reservoir	GB30938250	Lake	No	N/A
		Leam - conf R Itchen to conf R Avon	GB109054044140	River		
Raise Dam at Tittesworth Reservoir (5%)	123A	Tittesworth Reservoir	GB30433790	Lake	No	N/A
		Churnet from Meerbrook to Leekbrook	GB104028052770	River		
Raise Dam at Tittesworth Reservoir (25%)	123B	Tittesworth Reservoir	GB30433790	Lake	No	N/A
		Churnet from Meerbrook to Leekbrook	GB104028052770	River		

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Carsington to Tittesworth main (large)	128	Carsington Water	GB30447006	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes abstraction from Carsington Reservoir. Carsington Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Churnet from Meerbrook to Leekbrook	GB104028052700	River		
Carsington to Tittesworth main (small)	128Z	Carsington Water	GB30447006	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes abstraction from Carsington Reservoir. Carsington Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Churnet from Meerbrook to Leekbrook	GB104028052700	River		
Whaddon to Forest Transfer	132	N/A	N/A	N/A	Yes	This option involves the transfer of treated water in the network. It is assumed there will be no change in abstraction. Therefore, there is negligible risk to WFD water bodies.

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Blackbrook reservoir to Cropston WTW	134A	Blackbrook Reservoir	GB30435928	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes abstraction from a reservoir. Blackbrook Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Black Brook from Source to Grace Dieu Brook	GB104028047070	River		
Utilise Linacre Reservoirs	142	Linacre Reservoirs	GB30433178	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoirs and downstream water bodies associated with this option. The option includes abstraction from reservoir. Linacre Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Holme Brook/Linacre Beck	GB104027057670	River		
W.Midlands Raw Water Storage	143	Severn - Sundorne Bk to conf M Wenlock-Farley Bk	GB109054049141	River	No	N/A
Little Haywood new WTW on Upper Trent	150	Trent from Tittensor to River Sow	GB104028053272	River	No	N/A
Hampton Loade to Sedgley SR	152	Severn - conf R Worfe to conf R Stour	GB109054049145	River	No	N/A

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Terminate raw water export to Yorkshire Water	169	Howden Reservoir	GB30432299	Lake	Yes	This option may lead to changes in the abstraction regime from the Derwent Valley Reservoirs. The Derwent Valley Reservoirs are heavily modified water bodies designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Derwent Upper Reservoir	GB30432359	Lake		
		Ladybower Reservoir	GB30432459	Lake		
		Derwent from Westend to Wye	GB104028057880	River		
Expand Carsington Reservoir (10000 Ml)	187A	Carsington Water	GB30447006	Lake	No	N/A
		Derwent Wye to Amber	GB104028052390	River		
Expand Carsington Reservoir (16000 Ml)	187B	Carsington Water	GB30447006	Lake	No	N/A
		Derwent Wye to Amber	GB104028052390	River		
Expand Carsington Reservoir (25000 Ml)	187C	Carsington Water	GB30447006	Lake	No	N/A
		Derwent Wye to Amber	GB104028052390	River		
Third party reservoir and new WTW's	190	Eyebrook Reservoir	GB30537182	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes abstraction from reservoir. The reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Eye Brook	GB105031050550	River		

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Increase Diddlebury/Munslow GW sources and remove network constraints.	191	Teme - Secondary Combined	GB40902G991000	Groundwater	No	N/A
		Corve - source to conf unnamed trib	GB109054049110	River		
		Corve - conf unnamed trib to conf Seifton Bk	GB109054044050	River		
UU import from Llanforda to Shelton (small)	301A	N/A	N/A	N/A	Yes	This option involves the import of water from a United Utilities WTW. This water will be sourced from United Utilities existing supply or from a scheme in United Utilities WRMP. As such there are no operational impacts associated with this option.
UU import from Llanforda to Shelton (large)	301B	N/A	N/A	N/A	Yes	This option involves the import of water from a United Utilities WTW. This water will be sourced from United Utilities existing supply or from a scheme in United Utilities WRMP. As such there are no operational impacts associated with this option.
UU release from Vyrnwy (75 Ml/d)	303A	Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	GB109054049880	River	No	N/A
UU release from Vyrnwy (40 Ml/d)	303B	Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	GB109054049880	River	No	N/A
UU release from Vyrnwy (25 Ml/d)	303C	Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	GB109054049880	River	No	N/A
Ambergate to Mid-Notts transfer	304	N/A	N/A	N/A	Yes	This option involves the transfer of treated water in the network. As this is assumed there will only be minor changes to the operational pattern of abstractions. On this basis, there is negligible risk of WFD deterioration.
Heathy Lea to North Notts transfer	305	N/A	N/A	N/A	Yes	This option involves the construction of a new link main from the Strategic Grid WRZ into the Nottinghamshire WRZ. On this basis, there is negligible risk of WFD deterioration

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Transfer from Hampton Loade WTW to Nurton DSR (large)	309	Severn - conf R Worfe to conf R Stour	GB109054049145	River	Yes	The scheme 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.
Transfer from Hampton Loade WTW to Nurton DSR (small)	309Z	Severn - conf R Worfe to conf R Stour	GB109054049145	River	Yes	The scheme 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.
DVA capacity increase to Heathy Lea (reduce Rivelin export)	313	Howden Reservoir	GB30432299	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoirs and downstream water bodies associated with this option. The Derwent Reservoirs are heavily modified water bodies designed for a variable water level. As such changes in abstraction from the reservoirs would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoirs due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Derwent Upper Reservoir	GB30432359	Lake		
		Ladybower Reservoir	GB30432459	Lake		
		Derwent from Westend to Wye	GB104028057880	River		
Expand Bamford WTW and DVA capacity increase (terminate Rivelin export)	314	Howden Reservoir	GB30432299	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoirs and downstream water bodies associated with this option. The Derwent Reservoirs are heavily modified water bodies designed for a variable water level. As such changes in abstraction from the
		Derwent Upper Reservoir	GB30432359	Lake		

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
		Ladybower Reservoir	GB30432459	Lake		reservoirs would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoirs due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Derwent from Westend to Wye	GB104028057880	River		
New abstraction and WTW on River Trent	406	Trent from Soar to The Beck	GB104028053110	River	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the River Trent associated with this option. In Q95 conditions there would be a flow reduction of 4.1% and the CAMS indicates that there is water available for abstraction in this catchment under all flow conditions.
Campion Hills WTW DO Recovery	420	Warwickshire Avon - PT Sandstone Warwick/Avon Confined	GB40901G300700	Groundwater	No	N/A
		Leam - conf R Itchen to conf R Avon	GB109054044140	River		
		Avon (Wark) conf R Leam to Tramway Br, Stratford	GB109054044402	River		
Draycote WTW DO Recovery	423	Draycote Water	GB30938250	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. This option includes the potential additional abstraction from a reservoir. Draycote Reservoir is a heavily modified water body designed for a variable abstraction regime resulting in a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There are unlikely to be any impacts on the downstream water bodies as Draycote Reservoir only has a small catchment area and the only outflow is compensation flow which will remain unchanged by this option.

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Little Eaton WTW DO Recovery	426	Derwent from Amber to Bottle Brook	GB104028052310	River	No	N/A
Mythe WTW DO Recovery	429	Severn - conf R Teme to conf R Avon	GB109054039760	River	No	N/A
Ogston WTW DO Recovery	430	Ogston Reservoir	GB30433781	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes abstraction from reservoir. Ogston Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Amber from Source to Press Brook	GB104028052380	River		
Shelton WTW DO Recovery	431	Severn - conf Bele Bk to conf Sundorne Bk	GB109054049142	River	No	N/A
Trimpley WTW DO Recovery	434	Trimpley Reservoir	GB30937959	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes abstraction from reservoir. Trimpley Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Whitacre WTW DO Recovery	435	Blythe from Patrick Bridge to R Tame	GB104028042572	River	Yes	This option includes the expansion of a reservoir. Whitacre Reservoir is an offline reservoir and is not listed as a WFD water body, therefore, any hydrological impacts on this reservoir are irrelevant. There may be a small amount of additional abstraction from the surrounding catchment under high flows to supplement the increase in reservoir catchment. The CAMS indicates that there is water available for abstraction from the Tame, therefore, only minor/negligible hydrological impacts are expected. It is worth noting that the assessment of WFD compliance is based on the assumption that the additional abstraction sourced from the Tame intake, where there is water available for abstraction, rather than the Bourne intake.
Finham FE to expanded Draycote Reservoir and WTW	437	Draycote Water	GB30938250	Lake	No	N/A
		Sowe - conf Withy Bk to conf R Avon	GB109054044540	River		
Longdon Marsh and increase Frankley output by 190 Ml/d	439	Severn - conf R Teme to conf R Avon	GB109054039760	River	No	N/A
UU Mow Cop BH Treated water import	523	N/A	N/A	N/A	Yes	This option is concerned with the import of treated water from the UU network (from the Mow Cop boreholes), which have been mothballed since 2003. The abstraction licence permits abstraction of up to 2 Ml/d. The hydraulic performance of the UU Mow Cop boreholes is known by UU, along with the water quality. As water is being abstracted from outside of STW's area the option is WFD compliant (with the assumption that UU will carry out a WFD assessment).
New GW Source Soar - PT Sandstone nr Coalville	528	Soar - PT Sandstone	GB40401G302800	Groundwater	No	N/A
		Ramsley Brook from Source to Carr-New Brook	GB104028047340	River		

Option name	Draft WRMP24 Ref.	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Raw water transfer from Congleton to Tittesworth Reservoir (UU import)	549A	Tittesworth Reservoir	GB30433790	Lake	Yes	Screening based on hydrological impact has identified that there would only be a minor hydrological impact on the reservoir and downstream water bodies associated with this option. The option includes additional discharge to Tittesworth Reservoir. Tittesworth Reservoir is a heavily modified water body designed for a variable water level. As such changes in discharge to the reservoir would not impact on the in-reservoir environment. There may be changes in the downstream flow contribution from the reservoir due to changes in spill pattern, but these are considered as minor hydrological impacts which are WFD compliant.
		Churnet from Meerbrook to Leekbrook	GB104028052770	River		
Treated water transfer fromCongleton to Tittesworth Reservoir (UU import)	549B	N/A	N/A	N/A	Yes	This option involves the movement of treated water within a network between United Utilities Water and Severn Trent. As such there are no pathways for the operation of this option to impact the aquatic environment. As such, the operation of this option is considered to be WFD compliant.
UU Bearstone treated water Import	552	N/A	N/A	N/A	Yes	This option involves the movement of treated water within a network between United Utilities Water and Severn Trent. As such there are no pathways for the operation of this option to impact the aquatic environment. As such, the operation of this option is considered to be WFD compliant.
ASL Capacity Increase - Hallgates to Oldbury	556	N/A	N/A	N/A	Yes	This is a distribution side option involving trunk mains enhancement and will not involve any new surface or groundwater abstractions.
ASL Capacity Increase - Oldbury to Meriden	557	N/A	N/A	N/A	Yes	This is a distribution side option involving trunk mains enhancement and will not involve any new surface or groundwater abstractions.

Appendix B: Option-level impact assessment

This appendix presents the impact assessment (methodological Step 3) for the options that were screened in for more detailed assessment through the screening steps (as set out in **Appendix A**). An impact assessment table has been completed for each water body for each option that has been identified through the screening process.

Appendix C: Programme-level screening

This appendix presents the results of the WFD compliance assessment screening outcomes for the cumulative impacts associated with the preferred programme and alternative programmes. Where an option has been screened in **Section** Error! Reference source not found. for an impact assessment, the water bodies that were screened in have also been identified. The cumulative reference convention is presented in **Section** Error! Reference source not found.. The outcomes of the screening steps are displayed in **Table C-1**. The impact assessment for the cumulative and water bodies scoped in for further assessment are presented in **Appendix D**.

Table C-1 Programme-level WFD screening outcomes

Cumulative number	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Cumulative PP1 Cumulative OC1 Cumulative CA1	Derwent from Westend to Wye	GB104028057880	River	No	
Cumulative PP2 Cumulative CA2 Cumulative GS1	Derwent Wye to Amber	GB104028052390	River	No	
Cumulative PP3 Cumulative OC3 Cumulative CA4 Cumulative GS2	Blythe from Patrick Bridge to R Tame	GB104028042572	River	Yes	Each Option 84C and Option 435 have been screened as compliant at Step 2 of the option-level assessment. These options would result in additional abstraction from this water body within existing license conditions. The CAMS for this water body is green, indicating that there is water available for abstraction in this catchment even if full licence rates are abstracted. As such, there is no risk to WFD compliance associated with the cumulative impact of these options on this water body.
Cumulative PP4 Cumulative OC4 Cumulative CA5	Howden Reservoir	GB30432299	Lake	Yes	The combination of Option 6 and Option 169 would change the level regime within Howden Reservoir. Howden Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment.
Cumulative PP5 Cumulative OC5 Cumulative CA6	Derwent Upper Reservoir	GB30432359	Lake	Yes	The combination of Option 6 and Option 169 would change the level regime within Derwent Reservoir. Howden Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment.

Cumulative number	Water body name	Water body ID	Type	Screened as WFD compliant	Reason screened as compliant
Cumulative PP6 Cumulative OC6 Cumulative CA7	Ladybower Reservoir	GB30432459	Lake	Yes	The combination of Option 6 and Option 169 would change the level regime within Ladybower Reservoir. Howden Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment.
Cumulative PP7 Cumulative CA8 Cumulative GS4	Carsington Water	GB30447006	Lake	Yes	Each Option 95B, Option 128, Option 128z and Option 187C would result in a change in the level regime within Carsington Reservoir. option includes abstraction from Carsington Reservoir. Carsington Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment.
Cumulative PP8 Cumulative OC8 Cumulative CA9 Cumulative GS5	Draycote Reservoir	GB30938250	Lake	Yes	Both Option 122A and 423 would alter the level regime within Draycote Reservoir. Draycote Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment.
Cumulative OC2	Derwent Wye to Amber	GB104028052390	River	No	
Cumulative OC7	Carsington Water	GB30447006	Lake	Yes	Each Option 95B, Option 128 and Option 187B would result in a change in the level regime within Carsington Reservoir. option includes abstraction from Carsington Reservoir. Carsington Reservoir is a heavily modified water body designed for a variable water level. As such changes in abstraction from the reservoir would not impact on the in-reservoir environment.
Cumulative CA3	Severn - conf R Teme to conf R Avon	GB109054039760	River	No	
Cumulative GS3	Vyrnwy - Lake Vyrnwy to conf Afon Cownwy	GB109054049880	River	No	

Appendix D: Programme-level impact assessment

This appendix presents the impact assessment for the water bodies that were screened in **Section** Error! Reference source not found. for more detailed assessment through the cumulative impact screening step. An impact assessment table has been completed for each water body for each cumulative impact that has been identified through the screening process. The cumulative reference convention is presented in **Section** Error! Reference source not found..

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