Inter-regional reconciliation 3: Summary report

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Water Resources West

West Country Water Resources

WRE Water Resources East

WReN Water Resources North

wrse Water Resources South East

Developed with support from:

Hydro-Logic Services

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Quality assurance record

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Version	Date	Author(s)	Reviewers	Version Status / Comment
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1. Background

1.1. Background to the 2023 reconciliation (Reconciliation 3)

There are complex interdependencies between each of the plans developed by the five regional planning groups, in particular around the timing and selection of transfer options. Alignment is critical to ensure a coherent set of plans across England (and parts of Wales), and the regional planning groups have worked collaboratively together to achieve this. The activity to align transfer options is commonly referred to as reconciliation, although the specific process undertaken between different rounds of reconciliation has differed to reflect the stage in the overall plan development process.

In autumn 2021, the five regional water resources groups undertook two iterative reconciliation phases to align their respective emerging regional plans in the context of strategic transfers and/or Strategic Resource Options (SROs). This is referred to as Reconciliation 1[1], and the reconciliation process was completed through a series of meetings involving regional planning leads and regulators. In these meetings the representatives of the regions explained their selection of schemes and referenced "best value" criteria. The selection cascaded from one region to another in a pre-determined sequence. This informed the development of the early stage 'emerging regional plans'.

Subsequently, in Spring 2022, a second round of reconciliation (Reconciliation 2[2]) took place to inform the development of the draft regional plans. Recognising lessons learnt from the experience of Reconciliation 1, and the criticality of ensuring an aligned set of best value plans in the draft regional plans for consultation, additional support to facilitate the process was provided by Hydro-Logic Services and Newcastle University. The staged process initially reviewed each of the inter-regional positions, before culminating in a national position review, and complemented by a range of scenario and option sensitivity tests. The reconciliation process also identified a range of alternative pathways and/or options for the draft plans. The conclusion to Reconciliation 2 resulted in no multi-region trades being selected through the process, in which water was moved from one region to another and then on to a third region. The reconciliation process identified a series of bi-lateral trades between neighbouring regions.

Since then, in autumn 2022, the regional planning groups have published their draft Regional Plans and been consulting upon them. Through use of the latest available information and in taking account of consultation feedback, a further round of reconciliation has been necessary (Reconciliation 3, covered by this report). The timescales between completion of the consultations on both the regional plans and Company WRMPs, and the submission of Statement of Responses and revised draft plans is tight. However, a strong basis for reconciliation is also provided by the draft plans themselves, allowing a targeted, prioritised approach to be taken. This has guided the approach taken by the regions in Reconciliation 3.

1.2. Approach and scope for Reconciliation 3

Collaboration and engagement between regions (or their constituent water companies) was far from restricted to reconciliation. The reconciliation process rather serves to formalise and consolidate these wider activities.

Based on the draft plans, it was possible for the regions to broadly identify the prioritisation and scale of effort to reconcile transfer options between each 'pair' of regions, reflecting

[1] Documented within *Regional Reconciliation Process – Version 7*, January 2022

[2] Documented within *Inter-regional reconciliation of regional plans – Spring 2022: Summary report,* July 2022

interactions across their boundaries. As such, Reconciliation 3 has taken place (starting in March 2023) as a series of separate bilateral meetings between pairs of regional groups, supported by relevant water company representatives where appropriate. In some cases, fewer or even no meetings were required. The expected number at the outset reflected the complexity of the inter-regional planning question, with additional meetings taking place where these were deemed to be required upon commencement of the reconciliation process:

- 3x meetings between WRSE and WRW
- 1x meeting between WRW and WReN
- 1x meeting between WReN and WRW
- 1x meeting between WRSE and WRE
- 1x meeting between WRSE and WCWRG
- Additional meetings: 1x between WRE & WReN, and 1x between WRE & WRW

The process has sought to review and re-align the selection of transfer options between the plans, and document the rationale or justification for that position for the updated regional plans and WRMPs.

Reflecting inherent uncertainties in long-term planning and/or the potential for option costs or supply-demand balances to be refined in future planning rounds, reconciliation has sought to define transfer options to a suitable level of definition to update the regional plans. However, the regions, recognising that further planning rounds will build upon the current one, have also sought to identify or re-visit potential lower-level transfer options and/or potential future alternatives. There is a limit as to how far some aspects can be considered prior to re-submission of the plans, and therefore reconciliation has also identified some areas of ongoing work in future. These could form refinements of the plans down the line, but the key outputs of reconciliation have been designed to be suitably adaptive and confirm strategic transfers as part of the process.

Role of Hydro-Logic Services

The process has been run by the regional groups themselves, working in collaboration with each other, whilst updating the Regional Coordination Group (RCG) along the way. Rather than undertaking a programme management or facilitation role, Hydro-Logic's remit as defined by the regions has been to robustly document the reconciliation proceedings both via records of the meetings that have taken place, and through this summary report. Hydro-Logic's role has not been to complete audits or assurance as such, but ensure that the position and stated justifications are accurately represented.

In addition, the regional planning groups have agreed to produce a short one-page 'commonality of approaches' summary, to show the extent of alignment on technical aspects of the regional plans, to complement responses to consultation. Hydro-Logic will also complete this separately on their behalf. The regional groups have agreed to include the 'commonality of approaches' summary in their statements of response and final plans.

1.3. Structure of this report

Sections 2 to 8 covers each bilateral interaction between pairs of regions during reconciliation (as shown in the Table of Contents). Summarising Reconciliation 3 in this manner mirrors the way in which the process has been run.

Section 9 provides a brief summary position of Reconciliation 3 in the round, in contrast to Reconciliation 2, and highlights the residual ongoing actions that have been identified by the regions in reconciliation, which may continue between and into future planning rounds. In this latter context, it is noted that in future there will be a regulatory expectation of bi-annual regional plan reviews to allow tracking and monitoring of progress in these areas.

Useful references and supporting data sources are also provided in Appendix 1, along with a record of the dates and attendees of the various meetings in Appendix 2. Given the prominence of the Severn Thames Transfer (STT) within reconciliation, a joint position statement between companies and regions on its continued development is also included within Appendix 3.

2. WRW-WRSE reconciliation position

Recognising long-term uncertainties, WRSE and WRW have adopted a scenarios approach to reconciliation to ensure that the position is suitably adaptable, given the complex interdependence across these two regions. Three reconciliation scenarios have been explored (for which WRSE's modelling also provides an understanding of scheme selections under 9 alternative situations in each case) across three meetings. These reconciled scenarios support adaptive planning by the regions and companies.

Reflecting engineering and contractual practicalities, and the potential for lower-level changes in the precise scheme selection dates over time, an aggregated aligned position has been adopted where different support options and/or scheme phasing exists.

As part of reconciliation, a preferred plan position was required to develop the WRW plan; based on the position at the time, the anticipated preferred plan scenario adopted for WRSE was based upon EIP interim targets and company zonal level PCC targets of 110 l/p/d being met in a dry year by 2050. To achieve these targets the companies in the South East are dependent on Government interventions.

Under this scenario this results in selection of the Minworth via Grand Union Canal (GUC) from 2031 as the only inter-regional transfer.

Given the risks of government interventions on demand management not realising the expected benefits, the second scenario reflects a higher PCC position, which utilises both the GUC, and Severn Thames Transfer (STT) with the North West Transfer (NWT), Netheridge and Minworth support options (from 2050). The third scenario, with no SESRO available, results in higher volumes of the STT and its support options being required from an earlier date of 2039.

2.1. Scenarios approach to reconciliation

There are complex interdependencies both between, and within the WRSE and WRW regional plans. Changes and revisions to modelling data always raises the possibility of refinements to the position on transfers in technical terms, as part of valuable ongoing planning activity both within and between planning cycles. There are risks associated with the third round of reconciliation to try and establish a reconciled position at the beginning of March 2023, when WRSE's plan sign off process doesn't complete until the end of May 2023, and company updates continue through April. Therefore, sensitivity runs undertaken during the draft regional plans including some limited updates to the STT scheme underpinned the analysis used in this reconciliation process.

However, it is essential to lock down a robust reconciliation position with an adaptive planning approach that is suitably flexible in order for the regions to revise their plans on a broadly concurrent timeline. By illustration of the challenge, WRSE's sign-off of their plan position is expected by end-May 2023 (after completion of this report), with updates incrementally being provided from water companies. Meanwhile both regions are expecting to publish their Statement of Response position around the same time in mid-June (two weeks earlier for Companies such as United Utilities (UU) and mid-May for Severn Trent Water (STW)). There was a significant volume of work required following the lock-down of transfer positions, which was therefore required in early to mid-March to allow WRW to progress their plan builds.

WRSE and WRW therefore agreed to take a scenarios approach to reconciliation and plan development[3] to mitigate risks caused by changes in the plan basis in future. The three scenarios are described below:

- **Scenario 1 – Low WRSE PCC (Preferred Plan):** Following consultation feedback and further regulatory guidance, this reflects WRSE companies all achieving the 110 l/hd/d PCC target by 2050, under dry year annual average conditions, and meeting the Environment Improvement Plan (EIP) interim water targets reduction. This marks a key change from the draft plans, and assumes delivery of benefits from government interventions that may not in practice be realised.

- **Scenario 2 – Higher or normal WRSE PCC:** This reflects the WRSE position if the PCC follows a higher, or more expected trajectory in line with the draft plan, in which a 113 l/hd/d PCC was achieved under normal year annual average conditions. It is subject to less risk than Scenario 1 and less reliant on accelerated government interventions.

- **Scenario 3 – No SESRO scenario:** This reflects the potential for this major scheme not being delivered or available, allowing an understanding of the alternative plan needs in this situation. A similar scenario was included in Reconciliation 2 as a key alternative plan.

Presentation of such alternatives in the regional plans allows regulators and stakeholders to understand the potential for change in future, whilst also providing context for the continued work on key SRO schemes.

2.2. WRSE options appraisal modelling branches

Subject to the availability of transfer options from WRW (Section 2.4), the selection of transfer options from WRW to WRSE in reconciliation has been driven and informed by WRSE's option appraisal modelling. It is important to recognise that for each reconciliation scenario defined in Section 2.1, WRSE's modelling outputs present:

- 9 situations, representing combinations of demand growth and environmental destination / climate change scenarios.

- Under each situation, four different supply-demand positions solved during the options appraisal process: Normal year, dry year annual average (1:100), dry year annual average (1:500) and dry year critical period (1:500). The numbers in brackets represent drought severity.

The image below (Figure 1) depicts an example of the 9-branch model as reviewed at various points throughout reconciliation (including with other regions), with Situation 1 being at the top, and Situation 9 at the bottom. The modelling is branched from a central initial set of discrete forecasts into a wide variation of forecasts. Upper branches represent higher or worse scenarios, with lower branches lower or less severe scenarios. Options selected are presented by the colour coded circles.

[3] This is to explore the alignment of transfers between the plan, and is additional to and/or separate from wider scenarios or adaptive branches that may be included in wider planning processes. For example, WRSE's 9 branch model is described in Section 2.2.

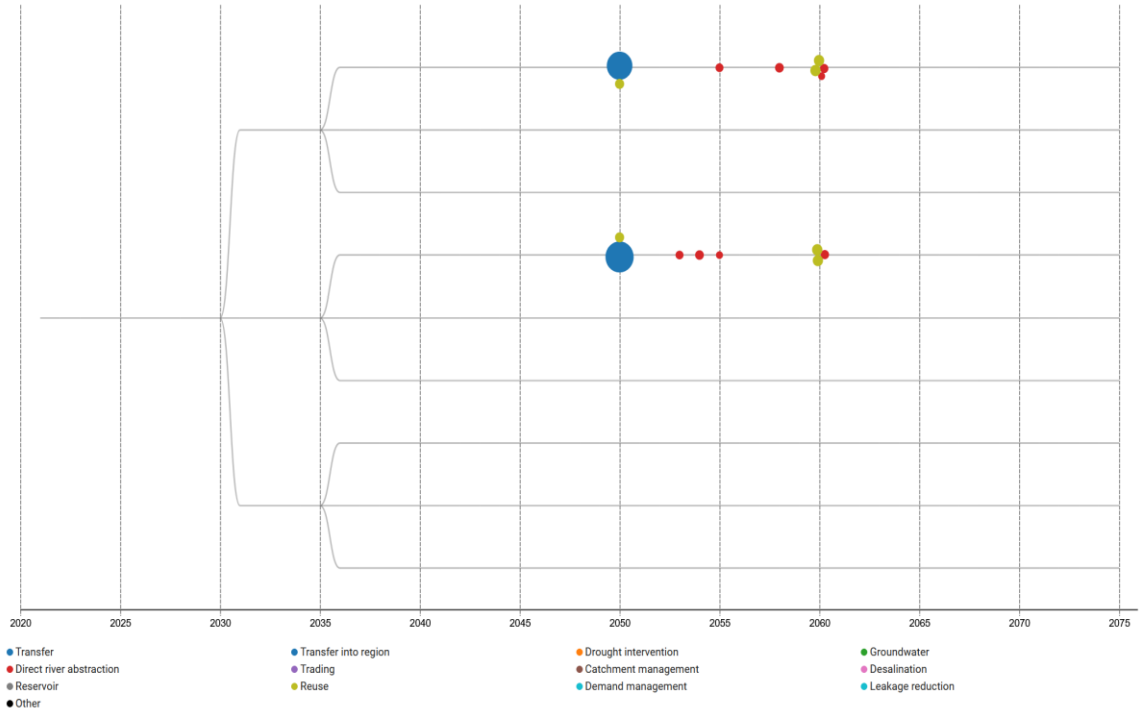

Figure 1 Depiction of WRSE 9 branch model outputs reviewed in reconciliation, with blue circles representing the STT interconnector and the red and mustard coloured circles representing the NWT (via Vyrnwy) and Severn Trent re-use support options respectively.

The Housing plan, Environmental Destination (licence capping and previously agreed sustainability reduction by companies) and medium climate change is always in the central initial set of discrete forecasts. The 3 initial branches in Figure 1 are driven by different demands (growth scenarios): The upper is the housing plan plus Oxcam; the middle branch remains as housing plan only, and the lower branch is ONS18 based. From these three branches, there are three further branches (to give 9 overall), which relate to low-medium-high environmental destination. Climate change severity is aligned to this, as climate change is influential on environmental destination by 2050.

An understanding of the above is important, as it demonstrates that decision-making is not based solely upon a single optimised modelled position, but takes account of a range of situations. Also, when considering the history of successive reconciliations, reference and cross-comparison can be made between each modelling output, and with sensitivity tests on alternatives.

For reporting purposes the declared ('preferred' in alignment to other regions) pathway for reconciliation for WRSE is Situation 4. Situation 1 has also been used as a key comparator, which shows the situation with the higher demand driven by Oxcam. This is the same as Reconciliation 2.

2.3. Aggregation of strategic transfer and support option dates

WRSE and WRW have agreed to present an aggregated, aligned position on transfer option selection (i.e. both interconnections/pipelines, and all support options where relevant). This avoids presenting an onerous set of dates and capacities where options are selected in modelling in phases. This is particularly important given potentially small changes in the underpinning datasets have the potential to marginally shift the dates (which has no material bearing on the strategic needs or position). It is considered to be justifiable on the basis that the receiving water companies would need contractual certainty about support options being available in the future, when delivering the interconnection between regions. It is based on

practical option contractual and delivery practicalities, outside of a modelling environment used to *support* decision-making.

Both the actual option selection agreed (based on the modelling), and the aggregated position are presented in this report for transparency. The former will be used in the detailed assessments in both regional plans, for technical alignment in modelling or analytical terms, impacting costs and best-value plan metrics. However, the approach tolerates a low level 'managed divergence' at technical level, recognising that plans are being developed at the same time[4]. However, the latter enables a clear and aligned headline position to be presented across both plans, and with the underpinning WRMPs. This reflects the strategic, long-term nature of the planning process and scenarios explored, particularly given reconciliation option selections are typically the 2040-50s and beyond.

2.4. WRW STT and NWT option availability

As in Reconciliation 2, a review was undertaken by WRW (on 17th March) of option availability to inform the reconciliation position. In summary the position for Reconciliation 3 showed:

- Mythe via STT not available to support an export to WRSE, due to WRW in-region use (as Reconciliation 2)
- NWT via Shrewsbury and STT not available for WRSE export (explained later in this section)
- 25 Ml/d of NWT used in-region by STW from 2030 based on latest modelling available for Reconciliation 3 (until the 2040s, when the full capacity could be exported to WRSE)
- All other support options (Netheridge, Minworth and Vyrnwy) available at full capacity for drought conditions, with Netheridge and Minworth support options also available during a normal year.

It is worth noting that in the early stages of Reconciliation 3 that WRW and WRSE assumed full availability of the NWT for WRSE. It was important to allow the WRSE model the ability to select this option so we could understand if (and under what scenarios) a conflicting selection would arise. WRW had indicated the potential for STW to select part of the NWT based on initial modelling at that time, and since the maximum raw water available from Vyrnwy is 180 Ml/d this could reduce availability for WRSE.

Utilisation of NWT options

The option capacities presented potentially mask a key underlining assumption used by the RAPID SRO teams and within the modelling process. Based on previous simulation modelling, a utilisation of the NWT of 15% was identified based on dry year needs. Beyond this, UU cannot ensure that resilience in their area can be maintained. The SRO project team have reflected this so that the NWT is unavailable for selection in WRSE's normal year supply-demand position. As part of Reconciliation 3, WRSE affirmed that this approach had been signed off by the SRO team and this restriction included in the latest modelling.

NWT via Shrewsbury and STT option (non-availability)

This option involves UU providing potable water to STW's Shelton resource zone, allowing STW to cease or reduce abstraction elsewhere in the zone. This could either meet a need to change STW abstraction licences in the Shelton zone, or allow a reduction in abstraction from the River Severn, allowing use of this water for the STT abstraction downstream on the

[4] This avoids minor changes in dates in WRSE modelling impacting the WRW plan, for example, with insufficient time to include the changes.

Severn. As described earlier, this transfer is only available from UU at 15% utilisation, whereas STW would require the water on a continual basis to meet reductions in licences in the zone. Furthermore, as already accounted for by the RAPID SRO work on the NWT, the option is still not available for export to WRSE, because STW also needs to implement other solutions and reconfigure their zone to deliver licence reductions, and network connectivity limitations make this route of the NWT an inviable option.

Consultation feedback on WRW exports

WRW consider that no major issues had resulted from consultation preventing continued consideration and/or inclusion of the transfer options as included in the draft plans. There was mixed feedback on the explanation of transfers, with positive feedback from CCW, but the EA felt this could have been clearer for stakeholders; the approach in Section 2.3 simplifies communication for future plan revisions. Some specific concerns had been raised by some stakeholders, but these were considered to be surmountable and concerns mitigated.

In the context of the transfers being explored with WRW, WRSE also explained during reconciliation that the plan had generally been accepted by regulators and stakeholders in consultation. Some related comments had been raised on the STT, with it being suggested that the STT was used before SESRO; modelling suggests that SESRO would not be subsequently selected, resulting in greater desalination options instead, compromising the best-value plan position. Ofwat had asked why the SESRO scheme was not being progressed at a larger capacity, which has the potential to impact STT selection. Oxfordshire County Council favours the STT option through the canal, but this would put pressure on the canal given the size of the transfer.

2.5. WRSE modelling and option selections

WRSE presented two key sets of modelling outputs[5] across the three reconciliation meetings. Recognising that model updates were still to be made later in the process by WRSE, model runs based on both draft plan data, along with further runs with STT and GUC costs updated were used to inform reconciliation decisions. WRSE were expecting data updates from companies, but these were not all completed in time to inform this part of the process.

Reconciliation 3 focussed upon:

- Modelling from the draft plan stage most closely corresponding to the 3 scenarios[6]
- Revised modelling with latest STT and support scheme costs (but original cost information for other options), relevant to Scenario 2 and 3[7]

There are several key observations of note:

- As in Reconciliation 2, the selection of the Minworth via GUC option has continued to show high stability across WRSE modelling, with model selection of at least one phase from the earliest implementation date of 2031 in all cases. Timings of the second phase alter based on scenario severity, and earlier selection is made more likely depending on the pace of implementing environmental destination in Affinity Water. There is also a potential interdependence with WRE (Section 3).

[5] Held in the file "*Reconciliation3_WRSE_selection.xlsm*".

[6] Initial outputs included Mythe, but this was later excluded from WRSE modelling given WRW in-region use.

[7] WRSE committed to also, for completeness, do an additional refinement run following the meeting, with the first 25 Ml/d NWT phase unavailable before the 2040s for Scenario 3 (exact date to be confirmed by STW).

- If SESRO is available in the model scenarios, it is typically selected before STT. This results in the STT typically meeting WRSE's needs later in the planning horizon.

- The STT pipeline capacity is greater than the sum of the support options. This is because the STT can also benefit in DO terms from unsupported abstraction, which is water from the River Severn above the proposed hands-off flow conditions.

- STT and support options are evidently sensitive to changes in demand driven by PCC; as the STT is not selected in Scenario 1 (preferred plan for WRSE) in any of the model runs reviewed[8]. The PCC reductions in Scenario 1 are deemed, however, to be high risk by WRSE given dependence on the timely implementation of government interventions (companies would be unable to bridge the supply-demand gap if benefits aren't realised).

- When using the latest STT costs in WRSE modelling available at the time of the Reconciliation 3 meetings, the STT and support options are not selected within Situation 4 for Scenario 2, although they are in Situation 1. In Situation 4, Beckton desalination (extension of existing plant) is selected in place[9], an option that in Reconciliation 2 was observed to be a closely competing option (and thus named as a key alternative in the draft plans). However, it was noted by WRSE that Beckton desalination costs had not been updated, and generally when updated Company options costs have increased. Broadly speaking, STT has been selected in preference to both the Beckton desalination and reuse options across model runs completed across successive reconciliations / plan stages. Further model runs were planned with updated costs for Beckton and other schemes, but these would not have been available in time to inform Reconciliation 3. As a result, both regions agreed to use Situation 1 to define the Scenario 2 reconciliation position as the best guide on balance, and ensure a suitably adaptive plan.

The tables (Table 1 to Table 3) below show the agreed Reconciliation 3 position across the three scenarios. The capacity and implementation date columns are "as modelled", whereas the right-most column is the Reconciliation 3 option position to be communicated or presented in the revised plans based on the aggregated dates approach (Section 2.3).

Schemes with "X" denoting the option are either not available for WRSE, or not selected in the reconciled plan for this scenario.

[8] It is worth noting that, at the time of finalising the reconciliation report in early-May 2023 that the vast majority of WRSE's model runs aligned to the 110 l/hd/d dry year demand policy are consistent with the Scenario 1 position (in terms of exclusion of the STT). The latest modelling includes various updates including: the latest population and property forecasts impacting demand (no changes to supply forecasts), revision of costs across options (including feedback from environmental assessments such as mitigations, and cost indexing), and options changes linked to consultation feedback.

[9] This is seen to be potentially a contentious scheme by WRSE given the experience of operating Thames Water's existing desalination plant, and that full utilisation was likely to be required in practice.

Scenario 1 - Low WRSE PCC (Preferred plan)

Table 1 WRW to WRSE transfer and support options – Reconciliation 3 position – Scenario 1

WRW-WRSE transfer option	Capacity (Ml/d) – From modelling	Implementation date (Into supply) – From modelling[10]	Aggregated reconciliation position
Minworth via GUC	50 Ml/d +50 Ml/d (Total 100 Ml/d)	2031 2040	GUC Minworth selected in 2031 (100 Ml/d)
STT pipeline with unsupported abstraction	**X**	**X**	**X**
Netheridge via STT	**X**	**X**	**X**
North West Transfer: Vyrnwy via STT	**X**	**X**	**X**
Minworth via STT	**X**	**X**	**X**
Mythe via STT[11]	**X**	**X**	**X**
North West Transfer via Shrewsbury and STT[11]	**X**	**X**	**X**

Scenario 2 - Higher / normal WRSE PCC

Table 2 WRW to WRSE transfer and support options – Reconciliation 3 position – Scenario 2

WRW-WRSE transfer option	Capacity (Ml/d) – From modelling	Implementation date (Into supply) – From modelling[10]	Aggregated reconciliation position
Minworth via GUC	50 Ml/d +50 Ml/d (total 100 Ml/d)	2031 2040	GUC Minworth selected in 2031 (100 Ml/d)
STT pipeline with unsupported abstraction	400 Ml/d	2050	STT selected in 2050 = 400 Ml/d pipeline +
Netheridge via STT	35 Ml/d	2050	35 Ml/d from 2050
North West Transfer: Vyrnwy via STT	25 Ml/d 25 Ml/d (50 Ml/d total) 30 Ml/d (80 Ml/d total) 30 Ml/d (110 Ml/d total) 30 Ml/d (140 Ml/d total)	2050 2060 2060 2060 2061	140 Ml/d from 2050
Minworth via STT	115 Ml/d	2054	115 Ml/d from 2050
Mythe via STT[11]	**X**	**X**	**X**
North West Transfer via Shrewsbury[11]	**X**	**X**	**X**

[10] Years stated in these tables refer to the operational date (i.e. water into supply) starting on 1 April of the given year. For example 2031 means that scheme operates from 1 April 2031, proving a full deployable output benefit in the reporting year 2031/32.

Scenario 3 – No SESRO scenario

Table 3 WRW to WRSE transfer and support options – Reconciliation 3 position – Scenario 3

WRW-WRSE transfer option	Capacity (Ml/d) – From modelling	Implementation date (Into supply) – From modelling[10]	Aggregated reconciliation position
Minworth via GUC	50 Ml/d +50 Ml/d (total 100 Ml/d)	2031 2040	GUC Minworth selected in 2031 (100 Ml/d)
STT pipeline with unsupported abstraction	500 Ml/d	2039	STT selected in 2039 = 500 Ml/d pipeline +
Netheridge via STT	35	2039	35 Ml/d from 2039
North West Transfer: Vyrnwy via STT	50 Ml/d +25 +25 +35 Ml/d (135 Ml/d total) +15 Ml/d (150 Ml/d total) +30Ml/d (180 Ml/d total)	2042 2045 2046 2050	180 Ml/d from 2039
Minworth via STT	115 Ml/d delivered in two phases of 57.5 Ml/d	2050 and 2054	115 Ml/d from 2039
Mythe via STT[11]	**X**	**X**	**X**
North West Transfer via Shrewsbury[11]	**X**	**X**	**X**

Decision points

The scenarios shown above differ in particular around the selection of the STT (and support options), with the earliest selection in 2039. The decision points to move from Scenario 1 to the alternatives are summarised below based on email exchanges between WRSE and WRW:

- Scenario 2 - The long-term issue of water efficiency interventions not performing as well as expected, or the Government interventions not providing the anticipated benefits, was seen as being difficult to pinpoint to an exact date. Rather, the trigger is based on supply-demand headroom; WRSE's plan has risk triggers associated with the supply-demand balance available headroom position. Despite supply schemes increasing capacity, WRSE feel this could quickly be eroded if water efficiency benefits are not realised, bringing a potential need for STT by 2050 (or even earlier if the government reverses previous decisions and/or regulators do not fund the relevant interventions). Indicatively given the lead-time for the STT, this decision would need to be taken by the 2039 planning round, so it could be available by 2050.

- Scenario 3 – The decision on the SESRO option will occur in 2029, based on when WRSE would know if they would need to follow an alternative path in their adaptive plan.

WRSE noted that their next draft regional plan is expected in autumn 2026. WRSE will also need to understand if the STT can support normal year modes of operation by March 2026 to allow it to be considered in the next plan.

[11] Not available for WRSE as explained in Section 2.4, "NWT via Shrewsbury and STT option (non-availability)", above.

In order to be clear on the need for the STT to continue progressing, so it could be available if needed in future, WRSE, WRW, Thames Water, United Utilities and Severn Trent have jointly agreed a short position statement. This is presented in Appendix 3 for reference.

2.6. GUC interdependence with WRE

As detailed separately in Section 3, in Reconciliation 3 WRE and WRSE have considered the potential for the GUC to be used in the earlier stages of the planning horizon to resolve challenges for Cambridge Water associated with statutory licence caps and population growth (by allowing Affinity to use the GUC in place of current exports from Anglian Water, with Anglian Water providing the available water to Cambridge Water).

This could mean higher utilisations of the GUC than planned by WRSE alone, and/or the need for the full scheme capacity in 2031 at 100 Ml/d rather than being delivered in phases. WRW and WRSE confirmed in reconciliation discussions that this future situation could be accommodated in principle (subject to Affinity's resource position) without impacting the reconciliation position between the two regions. From the perspective of the WRSE and WRW interface, the agreed Reconciliation 3 position to develop the GUC at 100 Ml/d available from 2031 if required, rather than in phases, allows this alternative position to be accommodated in the adaptive plan should there be sufficient water available (i.e. without changing selected scheme delivery dates and volumes). Transfers from WRE could potentially be reduced in the intervening period by WRSE, until the full capacity is required in WRSE; the extent to which this is the case is covered separately in Section 3.

2.7. Birmingham canal surplus (Oxford canal option)

Canal and River Trust (CRT) have a 15 Ml/d surplus on the Birmingham Canal Network, which has been offered to both WRSE (via the Oxford Canal) and South Staffs Water (WRW) to support Blithfield Reservoir. This was discussed by the regions in reconciliation to avoid conflicting claims on the same resource. WRSE's modelling indicated selection of the option in Situation 1 in 2045, Situation 5 in 2050, and Situation 7 in 2060. South Staffs Water currently have their option selected late in the planning horizon in 2070. WRSE felt that exclusion of the option for their use would have a minor difference on the plans, whilst from a WRW perspective the need is far in the planning horizon and therefore subject to uncertainties. It was agreed that South Staffs Water and WRW would reflect the current position in their plans by determining the alternative plan if WRSE subsequently did develop the option (if an alternative branch was followed in reality than Situation 4). The timescales mean there are many planning cycles to review and accommodate this position in future.

3. WRE-WRSE reconciliation position

Previously in Reconciliation 2, no new exports of water from WRE to WRSE were included in the plan, nor was there any change to the existing Anglian (Grafham) to Affinity transfer (i.e. no reduction in the existing transfer from WRE to WRSE). This was based on relative cost change between the plans, and WRE's in-region needs. This position has been reconsidered, but remains unchanged at this time for Reconciliation 3.

Specifically, following consultation, WRE and WRSE have explored (and continue to explore) the potential to address Cambridge Water's supply-demand needs earlier than planned in the draft WRMP, in order to resolve challenges associated with statutory licence caps and population growth. This would involve using available capacity in the Minworth via GUC option from WRW to WRSE to enable WRSE (Affinity Water) to reduce their use of the existing transfer from WRE. This in turn, using new infrastructure, would allow Anglian Water to support Cambridge Water within WRE. Whilst WRSE's modelling is ongoing, WRSE's preliminary analysis at the time of Reconciliation 3 indicated that the water availability arising through the development of the GUC transfer of 100 Ml/d, instead of two phases of 50 Ml/d, might release some water to support Cambridge for a limited time until 2035/36. This coincides with the delivery timeline of the Fens Reservoir within WRE.

3.1. WRE position following draft plan consultation

In January 2023, WRE had communicated to WRSE that they expected no change in the position from Reconciliation 2 and the draft plan submission in terms of transfers of water between the regions. WRE considered there to be no water available for export to WRSE, with options being fully utilised in-region. The potential to reduce the existing bulk supply of 90 Ml/d capacity from Anglian (WRE) to Affinity (WRSE) was also excluded from the plan, on the basis of the relatively greater (roughly double) cost impacts to WRSE compared to the benefit to WRE explored in previous reconciliations. WRE had, however, committed to continue to explore these options to reaffirm the position.

Upon commencement of Reconciliation 3, a specific additional consideration was flagged by WRE that had not been specifically explored towards the draft plans[12]. This had resulted from consultation feedback on Cambridge Water's timescale to address supply-demand needs largely driven by licence reductions and environmental destination. There are few alternatives to address supply-demand deficits in Cambridge Water, with demand management and leakage interventions already included in the plan (with underlying risks that government interventions fail to realise the expected benefits). Therefore, a further exploration of options with WRE was warranted to consider further the potential to accelerate the delivery of environmental destination, whilst also mitigating supply-demand risks by way of an alternative plan.

Primarily, the above position focussed attention on the potential reduction of the existing transfer from Grafham to Affinity (sometimes referred to as a reverse or 'virtual' trade, relative to the current position). This would in turn allow Anglian Water to provide water (freed up by the change) via new infrastructure to Cambridge Water. The potential for this situation to occur is linked to the use of the Minworth to GUC option (from WRW to WRSE, see Section 2), and whether availability could provide sufficient water to Affinity in the interim period.

[12] WRE options modelling and portfolio selection primarily utilises simulation methods, and so looks at the best solutions at a future point in time, whereas this specific issue is about the scheduling of options over time traditionally explored via EBSD by the companies, but now supported by a regional EBSD model run by WRE.

3.2. WRSE position on GUC to reduce Grafham transfer (Interim)

WRSE were clear that due to their own in-region needs, no support could be provided to WRE prior to 2030 under any eventuality given the timescales to implement new options and infrastructure. This is coincident with Anglian's own position to be able to provide new connectivity to Cambridge Water, in 2030. WRSE also stated that Affinity Water themselves have WINEP commitments in the current and next AMP, and if these are implemented too quickly this already results in unresolvable supply-demand deficits in the plan.

WRSE explained that their modelling typically showed a phased approach to use of the GUC option, with 50 Ml/d used in 2031, and a further 50 Ml/d in 2040. 2031 represents the earliest achievable delivery date of the GUC option irrespective of size. Recognising the agreed aggregated implementation date agreed between WRW and WRSE outlined in Section 2 (100 Ml/d from 2031), this was seen to potentially represent an opportunity to meet Cambridge Water's needs in the shorter-term. In the longer-term, WRSE stated there was little headroom available, and risks associated with the implementation of demand management by 2050; whilst hypothetically by 2050 Affinity Water's needs reduce due to PCC reductions, these are dependent upon realisation of savings from government interventions.

Despite the evident opportunity, at the time of the first reconciliation meeting WRSE expected updated environmental destination profiles imminently, meaning little availability was likely in the interim under their declared reconciliation pathway (Situation 4). It was considered only feasible to support WRE / Cambridge Water's needs in the interim under lower environmental destination scenarios and/or through later delivery in the WRSE area. It was also noted that a reduction in Grafham transfers could *alternatively or additionally* allow Anglian's licence caps to be delivered earlier rather than Cambridge Water's.

> Complex trade-offs between environmental scenarios and delivery timescales are evident both between and within all regions. Given the long-term uncertainties involved, whilst the regions have sought to develop a suitably reconciled, adaptive plan, it is clear pragmatically that only so much can be resolved or defined in this planning round. It is likely that the trade-offs between environmental delivery will need to be explored further as part of the ongoing regional plan process into the next cycle.

Given the potential for a lower environmental destination in WRSE to create an opportunity to support WRE under a potential future pathway, the lower branches from WRSE's modelling outputs were explored as part of reconciliation for the GUC option (see Section 2.2 for more details on WRSE's modelling situations and branches). Under a medium environmental scenario, spare capacity could be provided from the GUC until around 2055-60, when it is then still needed by WRSE. For context, Anglian Water are currently planning a relatively modest 15 Ml/d transfer to Cambridge Water.

WRE subsequently provided four profiles of need to support Cambridge Water and WRE overall via the reverse trade option supported by the GUC. These ranged from 15Ml/d (matching the existing planned temporary supply from Anglian Water to Cambridge Water prior to the Fens reservoir coming online) to 45Ml/d (a value that would open opportunities for accelerated delivery of licence reductions associated with wider licence caps and environmental destination, in addition to supporting Cambridge Water). These need profiles were to be considered for viability by WRSE starting in both 2031/32 and 2035/36.

At the time of writing, WRSE's preliminary analysis following updates to company level demand and supply forecasts, indicated that the water availability arising through the development of the GUC transfer of 100 Ml/d, instead of two phases of 50 Ml/d, might release some water to support Cambridge for a limited time until the Fens Reservoir is available.

3.3. Reducing existing Grafham transfer to WRSE (Permanent)

The permanent reversal of the existing transfer from Grafham to Affinity was previously ruled out on cost grounds in both Reconciliation 1 and 2. WRSE explained in reconciliation that two runs (reduced Grafham from 2040 and 2050) were previously modelled. The impact of reducing Grafham increased the size of SESRO to accommodate the reduced export, and provide more water to Affinity in 2040. It had previously been seen that this approximately double the costs to WRSE compared to the resultant saving for WRE.

The overall position and view on changes to the transfer remains the same for Reconciliation 3.

3.4. WRE export options to WRSE

In previous modelling tests during Reconciliation 2 by WRSE, very fine cost margins were observed between the Lincolnshire Reservoir[13] to Affinity transfer at 100 Ml/d and other options such as STT. WRE's position was, and remains that the resource is needed in-region. WRE previously stated the BVP impacts if an export was to take place during Reconciliation 2 (i.e. SEA construction and operational impacts, with higher cost desalination options being required with a high carbon impact and potential risks to environmental receptors in combination with other schemes). Using modelling based on information from the draft plans, this position is unchanged.

Additionally, following consultation, WRE have stated a challenge from stakeholder feedback to reduce the reliance upon desalination options, and in effect, any WRSE export would increase the amount of desalination being needed in the WRE region. This consolidates WRE's previous position on exports.

Both parties have continued to test the 50 Ml/d and 100 Ml/d options as sensitivity tests linked to Reconciliation 2. These options volumes are in direct competition with the GUC option in WRSE modelling terms (if available from WRE in future).

[13] Formerly referred to as the South Lincolnshire Reservoir, or SLR.

4. WCWRG-WRSE reconciliation position

For Reconciliation 3, the Mendip Quarries SRO option is still considered to be at a relatively early stage of development (RAPID Gate 1 maturity) and subject to high uncertainty. WCWRG also have increasing supply-demand needs in their own region, and in due course assessment of the impacts of the 2022/23 drought may impact on long-term plans. Therefore, WCWRG have stated that any residual availability for WRSE is difficult to quantify at this time and therefore the export option should not be included as an option in core plans at this time.

The costs of the option have also increased given additional infrastructure needs to access the available yield. Model sensitivity testing by WRSE has also shown that even if the option was available for selection, based on the latest costs, it would not be selected in the main reconciliation branch/situation (although it has shown the potential for selection in lower scenarios from the 2040s onwards). Both parties have committed to continue to explore the option in the long-term as part of the current and future planning cycles, but at this time is considered only as an alternative in the plans given the uncertainty on availability for export and cost.

4.1. WCWRG position on exports in Reconciliation 2

Previously WRSE's modelling in Reconciliation 2 showed the export element of the Mendip Quarries SRO option (then at 35 Ml/d for export) to be a potentially closely competitive scheme. However, given the high uncertainty in availability from WCWRG, along with technical uncertainties on the option (e.g. cost, yield), it was not deemed suitable as a commitment of water from WCWRG as an export at that stage. Both regions committed to continue to represent the scheme as a potential alternative in future plan iterations via sensitivity tests.

4.2. Change to the Mendip Quarry option since Reconciliation 3

Exchanges in January 2023 between WCWRG and WRSE broadly confirmed a similar position, that the option was to remain outside the core plans, but should continue to be explored as a sensitivity test to inform progression as part of ongoing work by RAPID. The Reconciliation 3 meeting in March 2023 sought to build on this in more detail to affirm the justification for this position. In this context, it is important to recognise that the Mendip Quarry option itself has evolved over the last year[14]:

- Previously the overall scheme yield was much higher (when considered on a consistent basis) at 87 Ml/d. This was able to be achieved based on a lower capacity abstraction (used to fill the quarry / reservoir) and a lower reservoir storage volume.
- The reduction in abstraction was driven by changes to the proposed future licence by the EA, limiting this to higher river flows, combined with the results of an assessment of climate change on the River Avon. The previous assumption was based on an existing abstraction licence on the River Avon, which allowed continuous refill of the reservoir throughout the year given a low hands-off flow requirement.
- The above factors resulted in a drop in the equivalent yield to 49 Ml/d, when also taking into account the critical period requirements of WCWRG's companies also using the scheme.

[14] Based further information provided by the options engineering teams as actioned in the reconciliation meeting.

- To recover and increase the yield of the option to export water additionally to WRSE, significant additional infrastructure is needed which adds to the cost of the scheme:
    - Doubling river intake capacity (including pumps, pre-treatment, pipework etc)
    - Addition of a second, nearby quarry (reservoir) site
    - Additional treatment (capital) costs for increased scheme capacities

4.3. WCWRG option position for Reconciliation 3

WCWRG do not consider that the export option should be available in the core plan for WRSE at this time, although it remains a potentially viable alternative that both regions agree should continue to be explored over time. The option will remain in sensitivity testing on the plans.

Whilst a potentially viable future option, the primary reason for exclusion as a feasible export at this stage was linked by WCWRG to two factors: in-region supply-demand needs, and cost uncertainty. As described in the previous section, whilst the outright availability is seen to be potentially greater than previous, the SRO option work is at a relatively early stage.

WCWRG resource position

The availability and cost of water available for export are closely linked to the WCWRG's own in-region needs. Supply-demand needs are understood to have increased (due to reductions in water availability) since Reconciliation 2, particularly Bournemouth and South West Water as seen in the draft plan submissions. Also, the current 2022/23 drought event is likely to cause further reassessment of the position within future regional plans (e.g. taking into account recent hydrological data).

As part of Reconciliation 3, previous statements in Reconciliation 2 were reviewed to confirm any change in position. The scheme is still deemed to be at a Gate 1 level of maturity, with the Gate 2 submission due in July 2023 (noting this is significantly after the WRSE plan signoff date at the end of April). Groundwater modelling and abstraction reviews has now been completed on the scheme. The required sustainability reductions on the Hampshire Avon have curtailed the total water available for use within the Bournemouth area. The proposed Poole water re-use scheme has been put forward into the Gate 2 process and a decision is expected on its progress in July 2023.

4.4. WRSE modelling sensitivity tests

Whilst the water is currently considered unavailable for export by WCWRG to WRSE, WRSE completed modelling sensitivity tests in the draft plan around the option as per the Reconciliation 2 commitments. WRSE presented the latest modelling outputs from runs on 17th February 2023, which splits the Mendip Quarry option into phases using the latest cost information for the option. This includes the additional support from nearby quarries. The modelling is based on least-cost optimisation as part of sensitivity testing.

These provisional results[15] have shown that the Mendip Quarry option is selected in some branches (see Section 2.2 for definitions), but not the reconciliation pathway for alignment (Situation 4) or the key alternative with higher Oxcam growth (Situation 1). The Mendip option is selected in lower WRSE branches, in 2050 at 50 Ml/d for Situation 5 (housing plan demand only, with mid environmental destination and climate change) and in 2042 for Situation 7 (ONS18 growth, with mid environmental destination and climate change). This shows the

[15] At this time they did not include revised costs for the STT and support options, along with other options. The runs included PCC in line with the draft plan, akin to Scenario 2 in the WRW/WRSE reconciliation reviews.

potential for the option to be considered by WRSE if a lower impact branch was followed in future.

5. WReN-WRE reconciliation position

Previously, limitations in the existing interconnectivity within the WRE region (particularly within Anglian) limited the viability of exports from WReN to WRE (assuming water to be available), along with the high stated costs of adding new connectivity. WRE has reviewed this position, and preliminary modelling by WRE of a hypothetical longer term import option from WReN indicates that it could lead to a change in WRE's long-term supply option portfolio. In light of significant uncertainty regarding the feasibility of imports from WReN, however, WRE has proposed to review this position more formally in future rounds of planning.

The supply-demand position has changed hugely for WReN from the start of the regional planning process and, like in Reconciliation 2, there are significant in-region needs to address. This impacts the availability and potential cost of any export options to WRE, compared to the traditional view of surplus resources in the north. In the south of the WReN area there are significant WINEP and/or Environmental Destination considerations. The region is currently subject to loss of an existing transfer from WRW, which also needs to be offset. This limits the potential for water exports from WReN, although further work towards the next planning cycle will allow for consideration of further in-region and export options.

At this time, whilst both regions have considered further the existing 'no transfer' position, no material change to the Reconciliation 2 position has been identified. Both regions have agreed to undertake further work towards the next planning round.

5.1. WReN and WRE resource position

The Yorkshire Water (YW) part of WReN is facing a significant deficit to address from early in the planning horizon. The WReN plan currently includes a range of other options to address this deficit, including transfers eventually from Northumbrian Water's Kielder zone at 140 Ml/d. Whilst a significant component of the deficit is driven by the updated supply-demand forecasts for this planning round (e.g. 1 in 500-year drought resilience and climate change), environmental destination and the expected loss of the existing Derwent Valley transfer from STW (in WRW) particularly impact the southern part of the Yorkshire Grid zone that neighbours the WRE region.

The WReN plan is subject to significant uncertainty. Greater abstraction is needed from the River Ouse to offset the loss of the Derwent transfer, which is looking increasingly likely (currently included in WRW, and thus WReN's preferred plan pathway, see Section 7). This requires WReN / YW to work on the basis that the transfer ceases in 2035 given the timescales involved. There is also a significant driver from regulators on the pace and scale of the abstraction reduction on the (separate Yorkshire) River Derwent, with a challenge that this should be delivered by 2030. Currently this is included in the WReN plan in 2050, and the viability of earlier delivery is felt to be unlikely given the potential scale of options to offset this loss, and when combined with other supply-demand challenges. There is also uncertainty and contention on the environmental drivers and interventions, warranting further investigation. The scale of required abstraction reduction focusses on delivering CSMG flow targets, but does not take into account wider environmental factors or impacts as a side-effect of delivery. The site is an SAC, with impoundments, and – noting that the reasons for the SAC failing to meet is required standard do not include flow / abstraction – there may be other potential solutions to meet the environmental drivers. YW consider that a mix of measures may represent a better outcome, requiring a 3-5 year study, and is in ongoing discussion with EA and Natural England over the inclusion of this investigative work within the AMP8 WINEP programme.

WReN have also had feedback that their own plan should include more feasible options to affirm that the long-term plan is best-value. Practically, WReN and YW see that work on these

would need to take place towards the next regional planning round, as it is impractical to robustly design new options for the revised draft WRMPs (if they were to indeed exist in material volumes). Previously, work exploring strategic transfers between the regions was undertaken, and a bi-directional transfer identified, but the option was screened out[16] due to the dependency on WINEP investigations and could not be included for consideration in the core plan.

The above position greatly limits the potential for exports to WRE, although hypothetically they may be viable. As a result, and given the priority of addressing relatively new and increasing in-region needs, the planning activity has not focussed on this aspect in the near-term.

Similarly, WRE has consultation feedback about their option sufficiency and variety, particularly given high amounts of desalination options included in the plan, driving a reconsideration of the wider options base. Resource needs remain high and new non-household demand is likely on the south Humber bank within WRE's region. This is compounded by proposed licence caps that could result in reduced water availability in Lincolnshire.

5.2. Transfer potential between WReN and WRE

Both regions agreed in reconciliation that hypothetically transfers between the regions could be feasible, but the uncertainties and current planning position do not make these viable in the core plans at this time. The greatest opportunity for transfers was agreed to occur under lower impact futures, for example, lower environmental destination scenarios and/or if the transfer from WRW to WReN was able to be retained; neither of these appear to be likely at present. Viability would also depend upon the outcome of WINEP investigations.

Previously, in Reconciliation 2, WRE stated the lack of connectivity within the Anglian area as a key constraining factor in importing water from WReN even if water was available. Strategic transfer options explored previously by WReN and WRE would geographically send water to Lincolnshire, whereas the nature of WRE deficits previously required water within the Cambridge and Essex areas of the region. The Anglian system has numerous resource zones, and whilst there is a degree of interconnectivity by 2025, this was not seen to be available to link additional transfers as connectivity was needed in response to WRMP19 drivers including peak licence caps and 1 in 200-year drought resilience. A very high cost was stated for further additional connectivity, limiting the feasibility.

Since then, in Reconciliation 3, WRE explained that the latest position on licence capping in the Lincolnshire area now reduces water transfers within the Anglian area, therefore opening up the possibility that new connectivity currently being implemented could potentially be fed by an import from WReN. Currently the impact of these licence caps in Lincolnshire drives a need for a large desalination option, but this only solves local deficits and does not support water resource zones further south. WRE also stated that further alternatives may be needed in future if a desalination option cannot be implemented. Future options in the order of 50-60 Ml/d could possibly offset environment destination impacts in this area.

Preliminary modelling by WRE of a hypothetical longer term import option from WReN indicates that it could lead to a change in WRE's long-term supply option portfolio, with potential changes in both desalination and reuse option selection or capacity, but no effect on the selection of the SROs. In light of significant uncertainty regarding the feasibility of imports

[16] The screening conclusion and more details on the option for the WReN export component are included in the *WReN Appendix 5 Options identification and appraisal report* (Option WReNB1 - Bi-directional Doncaster to Anglian Water transfer). The position is considered to remain unchanged at this time.

from WReN however, WRE proposes to review this position more formally in future rounds of planning.

Potential future opportunities discussed under lower impact futures included:

- Use of the River Ouse further downstream from Yorkshire Water abstractions (but upstream of tidal limits), allowing water to be freed up for export.

- Alterations to Severn Trent's licence capping profiles, altering the requirements in the Derwent Valley system, and therefore availability of water for WReN and the size of any potential increase in reservoir storage required.

- Exports from WRE to WReN are likely to be limited in size, but this could be explored further through sensitivity tests in future to help offset licence caps in the Sherwood Sandstones. WRE's modelling currently indicates that exports from WRE to WReN would result in unresolved deficits in Lincolnshire without additional desalination options.

All the above currently remain as hypothetical options. Both regions are trying to address licence reductions in their area, limiting cross-support unless one area was deemed environmentally to have priority / greater benefit over the other (or the position changed). The regions consider that ongoing work to the next planning round is required, and the position could be reviewed as part of the bi-annual reviews of regional plans. This process would allow further opportunity to review any longer-term actions around exploring the options, as investigations and ongoing work unfold.

6. WRW-WRE reconciliation position

The Lincolnshire Reservoir option being developed by WRE has a River Trent abstraction which geographically sits within the WRW geographical area. Both regions have engaged on this through the joint River Trent Working Group, and it is an example of regions working effectively across boundaries. Both regions are also working together around catchments that are subject to joint impacts and/or benefits from their activities, given the potential for in-combination impacts. The Minworth via GUC option from WRW to WRSE has the potential to meet interim needs for WRE under some plan scenarios. A range of potential alternative transfers have been previously explored between the regions and/or their constituent companies, and the position reviewed at Reconciliation 3. No change to the reconciliation position has been identified during Reconciliation 3, although actions to explore various lower level or prospective options in future are ongoing.

6.1. Minworth to GUC use for indirect support to WRE

The potential interdependency to support WRE using the GUC (via WRSE) is explained in Sections 3.1 and 3.2. The possibility of the GUC being used in the interim by WRE from 2031 was discussed with WRW also during reconciliation, and WRW confirmed that there was no barrier to this from their perspective given the reconciliation position and approach covered in Section 2.3. The ultimate beneficiary of exports using the GUC scheme does not impact the reconciliation position for WRW.

The option has also been stable in selection across reconciliation rounds, and so is being fully accounted for in WRW's plan; it further affirms the approach to size at 100 Ml/d from the outset in 2031. This was also seen to offer benefits in terms of the DCO and consenting processes, allowing efficiencies of applications being dealt with in a single phase.

Discussions with WRW also raised potential opportunities in terms of greater utilisations within the capacity limits than currently planned by WRSE; the scheme to date has largely been seen to be a 'dry year' option.

Reconciliation discussions between the two regions also raised the potential future option to use the Bedford-Milton Keynes canal as a pathway from the GUC to Bedford. Discussions with Canal and River Trust (CRT) also flagged the potential for other routes to the Great Ouse further upstream. At this time, work under RAPID's Gated Process is at an early stage in exploring these aspects, and later stages of the gated process may allow opportunity to reduce associated uncertainties and explore practicalities further. However, at this time, these options discussed are only hypothetical and will need to be explored towards the next planning round.

6.2. Lincolnshire Reservoir option

Whilst not a transfer to be reconciled as such, the Lincolnshire Reservoir SRO option being developed and led by WRE, and included in their draft plan, has an abstraction from the River Trent which is geographically located over 5 km inside the WRW boundary. It is situated upstream of North Muskham weir, which has a key role in governing abstractions from the Trent in WRW's area. It is therefore inter-connected in planning terms with WRW (relevant to STW and South Staffs Water in particular in water company terms and also relevant to energy sector abstractions within WRW). Both regions are therefore working together and considering outside their own boundaries as part of the plan process. The Trent, like any other catchment, is a finite resource, and several other options in the plans influence this catchment (e.g. GUC, Derwent Valley reservoirs).

6.3. Other WRE and WRW transfer options

Previously, reconciliation has focussed on the strategic transfer options between regions, but in Reconciliation 3 lower-level options were also explored further. No direct WRW to WRE options have previously been modelled by the two regions. The review took place prior to WRE's remodelling as part of their plan revisions, whilst being mindful of the practicalities at this stage in the process given timescales (with risks if work lacked sufficient robustness). Both regions agreed that even if options were excluded from investment modelling at this time, formal tests could be undertaken subsequently to support the plans and build upon previous reconciliations.

It was noted in reconciliation that from an environmental perspective, any options that impacted the Trent would likely have further in-combination impacts in that catchment, and so ideally wider options should ideally be sought to drive maximum benefit.

Canal routes / options

Several potential transfer routes via the CRT network hypothetically exist, but at this time they were limited in scale and would require enhancements to the canal network. At this time, the scale of complexities on such options are impractical to resolve in the short-term, and also not of strategic significance to the reconciliation position.

Severn Trent Water (STW) WRMP19 export options

STW noted that a number of feasible options had previously resulted from a strategic review of transfers, and were previously offered to Anglian Water in WRMP19. Anglian's modelling did not select the options on cost grounds. Subsequently, early in the current planning round, the options were withdrawn by STW given Anglian's previous position and noting the larger supply-demand challenge STW needed to address at that stage of the process (compared to now, at the time of Reconciliation 3). No further work has been undertaken by STW on these options since, although they can now be re-explored as viable options in future given the improved supply-demand position enabled by demand management interventions in the draft plan.

Two options were specifically discussed in reconciliation:

- Reversal of existing transfer from Anglian to STW (from Wing WTW), which currently supports East Leicester. The flow would be reversed with treated water up to 30 Ml/d[17].

- Wastewater transfer from Soar catchment (a major tributary of the River Trent) to Anglian.

Whilst late in the planning process to introduce new options, and the cost estimates / options basis would be out of date (so caution required), WRE committed to explore the previous screening result, and STW to retrieve the previously available information. At the time of completing this Reconciliation 3 report, STW has provided option details, but consideration of the options is ongoing by WRE. WRE will consider these hypothetical options, but it is unlikely that they would change WRE's option portfolios during the early part of the planning horizon. Further work to updated costs and explore availability of water to export from WRW would be needed to better understand how these options could play a role in the longer term.

[17] WRE clarified that two options have been proposed, at 18Mld and 30 Ml/d, and that the scale of investment and/or interventions required to free up the suitable resource by STW would prohibit these for delivery as AMP8 solutions.

The potential for the Derwent Valley SRO to provide support to WRE via the Trent was discussed. This alternative was not pursued further on the following grounds:

- Challenges on the reservoir expansion element of the SRO by Natural England meant that even in STW's own plan this was likely to be in an alternative, rather than preferred plan pathway.

- The resource ultimately is still part of the Trent catchment, and interrelated with North Muskham flows and from the same catchment as the Trent abstraction for the Lincolnshire Reservoir option. Essentially, this would lead to a displacement of impacts, increasing pressures elsewhere.

- The Derwent Valley reservoirs are used to support the River Derwent, and the abstractions upon that river. Storage is retained to be used at the right times, in reserve for dry periods when the water is needed for public water supply. Increasing the regular use of available or reserve resources was considered to impact on the core use of the resource, and the Derwent reservoir storage would be needed for in-region drivers in WRW.

6.4. In-combination environmental assessments

Whilst in-combination impact assessments are relevant to all plans, the Humber and Trent catchments are particularly important when considering the complex interactions between multiple-regions. The Humber is highly designated, and there is a direct link to abstractions in the Trent and Yorkshire Ouse. WFD also pushes the need to look at combined challenges. The scale of the interaction is such that the in-combination assessments influence at least 4 regions and/or their constituent companies, and is a major area of focus.

Separate from reconciliation, the environmental assessment leads across WRE, WRW and Yorkshire and Affinity have been working to explore how in-combination risks between the plans can be better assessed. The reconciliation process helps to inform this discussion, as it defines the schemes under assessment. Discussion on this topic between WRW and WRE raised the following key points to inform that assessment:

- Assessments to date have explored single larger schemes, but there are potentially several smaller schemes that impact the Trent.

- STW noted several smaller schemes that may be relevant: New Notts WTW at around 20-30 Ml/d; Carsington increases and expansion (which links back to the Derwent Valley in terms of system connectivity); Several options further utilising existing licences. South Staffs Water are also exploring an option for Blithfield expansion in the 2070s.

- The importance from a WFD perspective of changes in abstraction above recent actual was flagged, rather than abstractions remaining within the constraints of current licenced volumes.

- The importance and influence of other sectors was noted, whilst also recognising that the water industry draws significant scrutiny given the long-term planning process, but there was no equivalent, coherent power sector plan.

- The importance of taking account of demand management and leakage when assessing the overall plan option position was stressed by the regions, given the scale of investment and downward pressure that would result in abstraction. There is

the potential in catchments for net reductions in abstraction, even where new options are being developed. This aspect was to be taken back to the working group.

7. WRW-WReN reconciliation position

The reconciled preferred plan position for Severn Trent Water / WRW includes a cessation of the existing Derwent Valley transfer to Yorkshire Water (WReN) by 2035. This position remains unchanged from Reconciliation 2. This outcome is driven by licence capping to meet WFD no deterioration requirements, and a lack of viable alternatives in the required timeframes for delivery.

Previously, an alternative pathway was identified and presented in the WReN regional plan, based on the potential to retain the Derwent transfer. Severn Trent Water have confirmed that the transfer would need to cease in 2035 under all scenarios. Only in the long-term, indicatively 2050 and beyond, could there be a potential long-term reintroduction of the transfer, by which time Yorkshire Water will already have had to implement backfill options to maintain supplies anyway. However, this may bring about opportunities in future to be tracked as part of the second pathway, and continue to be explored as we move to future planning rounds.

A range of other WReN-WRW transfers have been considered at regional and WRMP level; no change has been identified from Reconciliation 2, with no additional options selected and/or currently considered available or feasible.

7.1. Derwent Valley export to WReN

Context to Reconciliation 3 position

The impacts of licence capping (specifically in this case impacting the Nottinghamshire zone, which has a high groundwater proportion incurring future potential licence reductions), causes a significant SDB deficit for STW in the 2030's. Specifically, the licence capping is to prevent deterioration under WFD (Sherwood sandstones), rather than enhancements under environmental destination.

The existing contract for the export of water from the Derwent Valley reservoirs in the STW area (in WRW) to YW (in WReN) terminates in 2084, although either party has the option to terminate it in 2035 by giving five years' notice in 2030. Ceasing the transfer is a feasible option for STW in their WRMP. In line with Reconciliation 2, the draft Regional Plans included the cessation of the transfer in 2035 in the preferred plan pathway. The WReN plan includes two specific options for backfilling the lost transfer: the internal transfer main from York to South Yorkshire, potentially supported by additional bankside storage on the River Ouse.

In the last reconciliation, it was stated by STW / WRW that there were limited feasible WRMP options to support the area impacted by licence capping. At that time, the most feasible alternative WRMP option was seen to be an increase in the capacity of the Derwent Valley reservoirs, and this informed the scope of the RAPID SRO scheme (with different reservoir capacity increases being explored). In STW's previous options appraisal modelling, both of these options were selected to address the SDB deficits.

An alternative pathway was identified and included in the draft plans to reflect the potential for the transfer to be retained in future. This was on the potential basis of the scale of benefit on the SRO reservoir option being sufficient to meet both needs, and should the resulting scheme represent the BVP option for WReN in future. Work is ongoing in AMP7 on the SRO as part of RAPID funded work.

Reconciliation 3 position on Derwent Valley export

The headline position for the reconciled, preferred plan pathway at Reconciliation 3 remains unchanged. The WRW and STW plans will continue to include the cessation of the existing

Derwent Valley transfer in 2035 to YW / WReN. A written notice will be sent to YW to confirm cessation of transfer in line with the contractual date for termination of the arrangement, which is for notice to be given prior to 31st March 2030 with the agreement subsequently terminating on 31st March 2035. It should be noted that due to the nature of YW's backfill option, it will be necessary for YW to begin planning for, and likely constructing, the backfill before formal notice is given by STW. This is to allow sufficient time for the backfill to be constructed and commissioned prior to cessation of the import.

STW have now stated that there is *no current circumstance* where the notice would not be given by 2030. A new reservoir cannot be built by 2035 in time to address the licence capping requirements in the STW area. As well as affirming the previous reconciliation position, this position also changes the definition of previously presented in an alternative plan pathway.

This position was confirmed to be independent from environmental enhancements driven by environmental destination, to be delivered by 2050. Environmental destination is subsequently facilitated by demand management and leakage reductions by 2050 (and after 2035). It was confirmed that the scale of demand management and leakage reductions[18] prohibited these interventions being brought earlier in the planning horizon (i.e. they could not be deployed to allow the transfer to YW to be retained).

Currently, STW are not planning to deliver the reservoir expansion option in the Derwent Valley as an adaptive pathway until the 2060's (no precise date was provided). As such, there represents an opportunity in the long-term from 2050 onwards for YW to possibly have the transfer reinstated. However, as YW would need to implement backfill options anyway, there remains the question as to the benefit of this as part of a future BVP (including with the potential for wider use of the water transferred to the WReN area, or beyond).

The above position does not change the shorter-term needs for development of backfill options in YW's area; WReN and YW will (and must) continue to work to the assumption that the transfer is lost in 2035. Longer-term refinement of the plan is possible towards the next round of regional plans. This may also be complemented by YW and WReN's ongoing work to review their own feasible option set given the significantly increased supply-demand deficit now faced compared to the last planning cycle. For STW, the cessation of the transfer is relatively cheap, so any alternative solution would need to cover the cost of the cessation of the Derwent Valley transfer.

As part of Reconciliation 3, Severn Trent also reaffirmed their previous position that the WRW-WReN transfer question is essentially separate to other aspects of reconciliation. As well as existing connectivity constraints, other zones in Severn Trent's area are also subject to supply-demand deficits requiring implementation of significant options implementation. As such, water is not considered available to feasibly meet WFD drivers from other parts of the area.

Ongoing review of options and intermittent transfers

It should also be noted that STW and YW have committed to further consideration of options. Although the transfer will cease in 2035 in its current form, there is potential for some form of intermittent use in the future. It may be that there are alternatives whereby some import could be continued when storage in the existing Derwent Valley reservoirs is high, but the sharing or split of water between STW and YW is varied from the current agreement as reservoir levels drop. Although this would not meet the dry year needs for YW / WReN, this could be explored in the future to reduce the need to pump water within YW's network from their backfill options, and may therefore be a more sustainable use of resources. In such a scenario, the YW backfill

[18] A large number of demand management schemes in places to meet regulatory objectives. These include a 20% DI reduction compared to the baseline (per day per head of population) by 2038, and the leakage programme towards the 2050 reduction target.

would still be required in order to supply customers during periods of drier weather, but its level of utilisation may be reduced. YW is also exploring in-region resilience benefits that the backfill may be able to provide (beyond simply replacing the lost import) in order to make best use of the proposed new assets.

7.2. Other transfer options

Both WRW and WReN (and/or their constituent companies) have previously explored a range of other potential transfer options as part of the plan process. A summary of these is included in the WReN draft Regional Plan (Figure 6-1, with further details in Appendix 5).

The position on the options is summarised below:

- **Kielder to United Utilities transfer** – Technically feasible. WRW confirmed there is no change in the option selection position on the Kielder export from WReN (Northumbrian, NW) to WRW (United Utilities, UU) from the last reconciliation. The option is not selected, primarily on the basis of cost. However, WRW, WReN, UU and NW will all continue to explore this option further, possibly as an SRO in AMP8. It is important to note that surplus water in Kielder reservoir is only sufficient to support either the Tees (NW) to York (YW) transfer (which is already in YW's BVP) or the Kielder to UU transfer.

- **Tees to Severn Trent via Yorkshire Water** – Constrained out, noting the Tees transfer from the Kielder zone is currently in the BVP for in-region use by WReN to meet wider deficits in YW area.

- **Cow Green to United Utilities transfer** – Technically feasible. Currently not in any plans due to cost compared to other alternative options, but remains as a potential option for consideration in future.

- **River Ouse to United Utilities** – Constrained out (not technically viable and source required for Yorkshire Grid, including offsetting loss of the Derwent transfer covered in the previous section).

- **Yorkshire grid network to Severn Trent** – Technically feasible, but significantly resource constrained at present given Yorkshire Water SDB position.

- **Sheffield to Peak District** – Constrained out (no alternative treated source identified for Yorkshire Water customers).

- **Doncaster to Severn Trent** – Constrained out at present (resource under WINEP investigation, as covered by similar dialogue with WRE).

8. WRW-WCWRG reconciliation position

No transfers from WRW to WCWRG have been included in the WCWRG plan. In previous reconciliations, the STT was not selected given high costs relative to other options, except in the most extreme scenarios. At the point of Reconciliation 3, WCWRG supply-demand position has deteriorated and is subject to additional uncertainties as to the consequences of the 2022/23 drought experience. Therefore, whilst there is no selection of an export at this stage, it remains a potentially viable option in future, and WCWRG will continue to review for their next regional plan. Given differences in drought coincidence, there remains the opportunity for the STT to support the future needs to WCWRG as well as WRSE in future.

8.1. Position in previous reconciliations

In both previous reconciliations, the potential for the STT to support WCWRG via the River Severn to West Country Transfer (35 Ml/d capacity) under high impact scenarios has been recognised. In neither case was the option, however, included in the WCWRG's preferred plan.

When explored at Reconciliation 2, both as a temporary stop-gap measure and a permanent option, the cost impact over other options was high, driven by significant WTW and network improvements being required in WCWRG, plus third-party costs to Canal & River Trust (water is transferred by an existing canal route). The STT was seen to be one of the highest cost options available to WCWRG at that time. The scheme was considered to be required only within an extreme 'global' high scenario with a regional impact of -272 Ml/d. From WRW's perspective, an alternative position with inclusion of the export to WCWRG (during option flex tests) showed little impact on the best-value plan position.

8.2. WCWRG position for Reconciliation 3

Email correspondence from WCWRG on the 29th March 2023 confirmed the current long-term position on the STT export from WRW as follows:

"The supply demand balance at the end of the planning period to 2050 has deteriorated from EP to DP due to adoption of BAU+ ED, and reassessment of climate change impacts. In addition, there are immediate changes to the resource balance within South West Water to address the 2022/2023 drought which means the overall resource balance in the short term is in flux and this will impact on the long-term depending on longevity of drought solution options therefore the longer-term water supply needs are uncertain. Therefore, re-evaluation of the STT transfer from WRW into WCWRG will be undertaken in the second Regional Plan, when a regional EBSD model will be available to undertake the necessary analysis and establish a clearer understanding of the costs and need of the transfer to the West Country region. The 35 Ml/d should remain an option in the long-term for both WRSE and WCWRG as the requirement has always previously been based on a drought requirement and an understanding that droughts will affect different regions at differing times. This later premise may change between this first regional plan and the second regional plan as our combined understanding of the way climate change impacts are felt across England which may be less specific and wider within the planning horizon to 2050. Also within the WCWRG region rapid changes to the population and hence customer base have become an uncertain variable in the first regional plan planning period and the long-term stabilisation of these changes remains to be seen."

8.3. WRW position on export availability in Reconciliation 3

WRW reported that, in principle, any support option for the STT that is available for selection by WRSE could instead be selected by WCWRG. These are as follows:

- Netheridge 35 Ml/d
- Vyrnwy 180 Ml/d, enabled by the North West Transfer
- Minworth 115 Ml/d

No conflicting selection would arise under the preferred plan reconciled with WRSE. Under either the WRSE demand scenario or the no-SESRO scenario, there would not be an additional 35 Ml/d available to select. Under these scenarios, should WCWRG in the future wish to select an STT support option, a best value assessment would be required to determine which of WRSE or WCWRG should include this 35 Ml/d element of the support options in their plan.

As recognised in previous reconciliations, even if these options were selected by WRSE, water could still be used in WCWRG when the full volumes are not needed by either WRW or WRSE. This would increase local resilience in Bristol and Bath towns. This drought resilience benefit would arise due to the lower correlation of drought events across regions compared to within regions. It is unlikely that a drought would be affecting both WRSE and WRW at the same time as it was affecting WCWRG.

9. Summary position and future actions

The previous sections have provided a summary of each of the inter-regional interactions and reviews to determine the Reconciliation 3 position. This section summarises the overall reconciliation position agreed upon by the regions, along with key ongoing or future actions relevant to inter-regional transfers that have resulted from the discussions.

9.1. Reconciliation transfer options selections

This section briefly summarises the Reconciliation 3 position by contrast to that from Reconciliation 2 which underpinned the draft plans. Readers are referred to earlier sections for the full detail and explanation for the transfer option selections in each case; this is especially important because in almost all cases, there will be ongoing work by regional groups related to transfer options (even where they are not currently included in the reconciled pathway).

Figure 2 was previously presented in Reconciliation 2, but has been expanded to show the latest Reconciliation 3 position by contrast in terms of the inter-regional transfer options. It does not represent an exhaustive list of all potential transfer options, but the key strategic transfer options explored during the reconciliation process.

RECONCILED INTER-REGION TRANSFER OPTIONS

Source region	Recipient region	Scheme	Rec 2	Rec 3
WRW	WRSE	Severn Trent Sources - Netheridge	✓	↘
WRW	WRSE	Severn Trent Sources - Mythe		
WRW	WRSE	Minworth (GUC)	✓	✓
WRW	WRSE	Minworth (STT)	↘	↘
WRW	WRSE	North West Transfer (NWT)	✓	↘
WRW	WRSE	Severn Thames Transfer (STT)	✓	↘
WRW	WRSE	Grand Union Canal (GUC)	✓	✓
WRE	WRSE	Lincolnshire Reservoir (for export)		
WRE	WRSE	Fens Reservoir (for export)		
WRE	WRSE	Grafham Water (reduce existing export to WRSE, permanent)		*
WRW	WReN	Retain existing Derwent Valley Transfer		
WRW	WReN	Derwent Valley Storage Increase + transfer	↘	↘
WRW	WCWRG	River Severn to West Country Transfer		
WCWRG	WRSE	Mendip quarries raw water reservoir	↘	↘
WReN	WRW	Kielder transfer		

KEY:

✓ Part of best value plan in the reconciled scenario

Not part of best value plan in the reconciled scenario

↘ Option included as (or in) a key pathway or alternative

(NOTE: that schemes not selected on an inter-regional basis may be included within a region)

* Option under consideration for potential short-term or interim use

Figure 2 High-level illustration of transfer options selected in the core reconciliation position, and transfer related options in alternative pathways or scenarios (Reconciliation 2 and this latest Reconciliation 3 are depicted)

The position is summarised as follows:

- The Minworth via GUC and GUC options are still maintained in the reconciled pathway.

- The STT and various support options are now only selected in alternative scenarios explored during Reconciliation 3, rather than the reconciled pathway associated with the preferred plan position to develop the WRW plan. Regions and companies consider that work to develop the STT should continue on this basis (Appendix 3). As in Reconciliation 2, the STT is closely competitive with in-region schemes for WRSE such as Beckton desalination.

- Under all scenarios, the existing transfer from STW (WRW) to YW (WReN) ceases in 2035, requiring YW to develop backfill options. An alternative pathway is retained only due to the potential for the transfer to be reinstated in the long-term, beyond 2050 (there may also be options for intermittent use, but these would not address dry year needs for YW / WReN).

- There is no change in the inter-regional position on other transfers, except the potential for an interim reduction in the existing transfer from Grafham (WRE) to Affinity (WRSE) supported by the GUC. At present, this interim reduction is not included in the reconciled plans, but continues to be explored and could be accommodated in the revised draft plans without affecting the reconciliation position between WRSE and WRW.

It is important to flag that the schemes in the above table marked as being included in the reconciled plan reflect selections related to transfers or exports between regions. Schemes may be selected for specific in-region use only (noting the option definition may be technically different, or a variant).

9.2. Reconciliation scenarios

Section 2.5 detailed the outcomes of WRSE's modelling and resulting selection of transfer options between WRW and WRSE across 3 scenarios as part of reconciliation.

As part of reconciliation, a preferred plan position was required to develop the WRW plan; based on the position at the time, the anticipated preferred plan scenario adopted for WRSE was based upon EIP interim targets and company zonal level PCC targets of 110 l/p/d being met in a dry year by 2050. To achieve these targets the companies in the South East are dependent on Government interventions. Under this scenario this results in selection of the Minworth via Grand Union Canal (GUC) from 2031 as the only inter-regional transfer.

Given the risks of government interventions on demand management not realising the expected benefits, the second scenario reflects a higher PCC position, which utilises both the GUC, and Severn Thames Transfer (STT) with the North West Transfer (NWT), Netheridge and Minworth support options (from 2050). This decision point for this scenario would be driven by supply-demand headroom triggers in WRSE's plan (as opposed to a specific date as such).

The third scenario, with no SESRO available, results in higher volumes of the STT and its support options being required from an earlier date of 2039. The decision point for this scenario for WRSE is 2029.

The three scenarios are depicted in the maps below (Figure 3)[19], using the aggregated approach to dates and schemes sizes described earlier in this document.

[19] As a summary depiction only, the authoritative reconciliation summary of the scenarios remains as agreed and presented in Section 2.5.

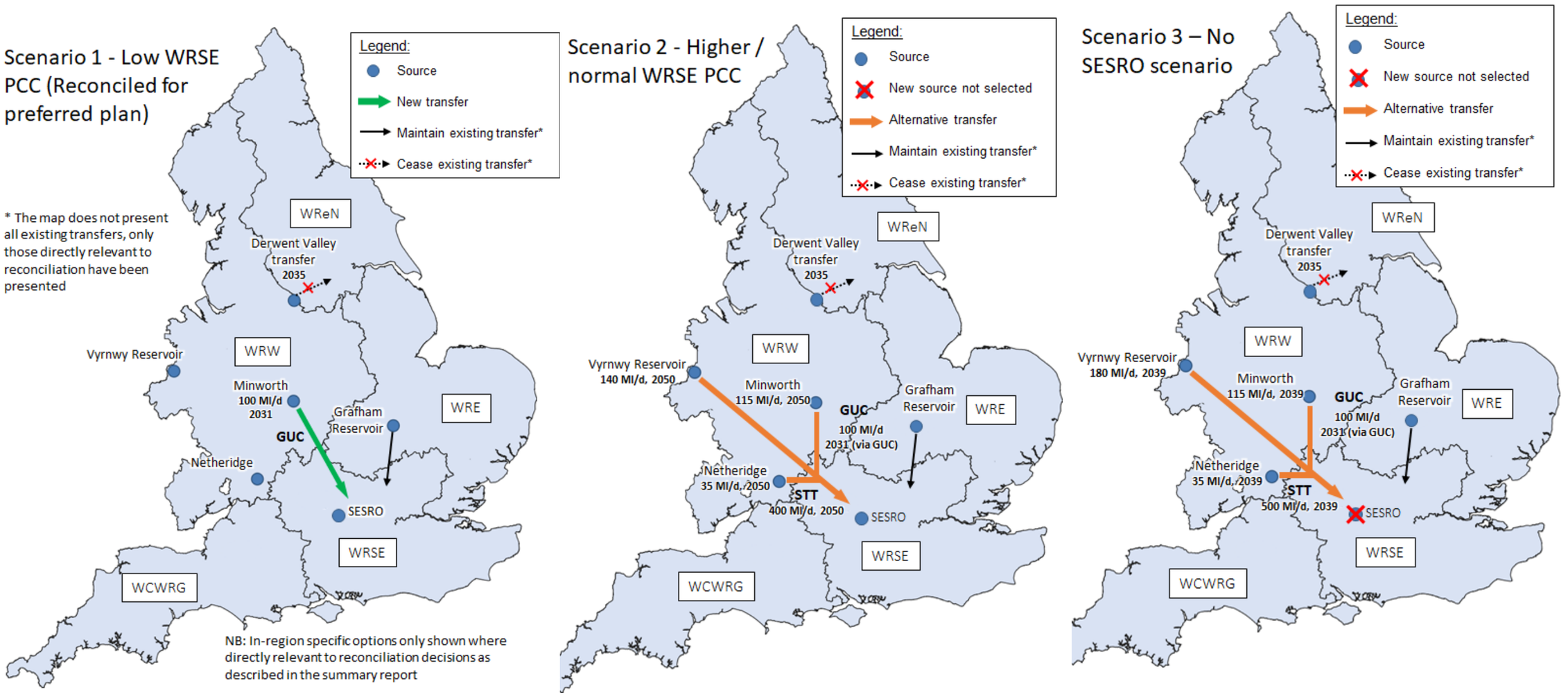

Figure 3 Map based depiction of the agreed inter-regional reconciliation position (Scenario 1), along with alternative Scenarios 2 and 3 for WRW and WRSE

9.3. Key ongoing actions to explore inter-regional transfers

Whilst a Reconciliation 3 position has been agreed by the regions based on the information at this stage of the planning process, various ongoing or future actions have been identified linked to inter-regional transfers. In several cases, these may continue through into the next planning round, in particular where they are relevant to lower-level options and/or further refinement of the current plans, exploration of new options and/or require further work to optimise complex inter-regional dependencies (e.g. around the pace of environmental destination delivery).

The key action areas identified through Reconciliation 3 are summarised below, recognising that they do not represent an exhaustive list of all regional group activities linked to transfers:

- WRE and WRSE will continue to explore the potential for interim use of the GUC to meet the needs of Cambridge Water's environmental delivery (licence capping) as part of the revised draft plans to affirm an agreed position.

- The Mendip Quarries option could form a viable alternative in future for WRSE, and WCWRG and WRSE will continue to explore this option in the long-term as part of the current and future planning cycles. It remains an alternative scenario for WRSE at this time.

- WCWRG will also in the next planning round consider further the costs and needs for the 35 Ml/d STT transfer from WRW. Should this be selected, a best value assessment would be required to determine which of WRSE or WCWRG should include this 35 Ml/d element of the support options in their plan.

- WRW / South Staffs Water will detail the current position on the Birmingham canal surplus (Oxford canal option) in their revised plans, and consider the alternative plan if WRSE subsequently developed this option in future.

- WReN and WRW will continue to work together around the cessation of the Derwent Valley transfer and associated SRO. They will continue to explore options for the potential long-term reinstatement of the transfer and/or the benefits of intermittent use of the transfer to reduce the utilisation of YW's backfill options. WRW, WReN, UU and NW will also continue to explore the Kielder option further, potentially as part of a future SRO.

- WReN and WRE will undertake further exploration of transfer options towards the next planning round, supported by further in-region work on expanding their feasible options for consideration in future plans. The same is the case for WRW and WRE, although specific work to explore previous WRMP19 options from STW is ongoing as part of the current planning round.

- In previous modelling tests during Reconciliation 2 by WRSE, very fine cost margins were observed between the Lincolnshire Reservoir to Affinity transfer at 100 Ml/d and other options such as STT. Both WRSE and WRE have continued to test the 50 Ml/d and 100 Ml/d options as sensitivity tests in the current planning round.

It is understood that in future there will be regular reviews of regional plans, and these would be a suitable opportunity to track progress in these areas.

Appendix 1: Further information and references

Reconciliation 1 summary report

"Regional Reconciliation Process[20] – Version 7" (January 2022)

Reconciliation 2 summary report

Inter-regional reconciliation of regional plans – Spring 2022: Summary report (July 2022)

Commonality of approaches summary

Inter-regional Reconciliation 3 - Commonality of approaches summary (May 2023)

Regional planning group websites (draft Regional Plans)

- Water Resources West - https://waterresourceswest.co.uk/
- West Country Water Resources Group - https://www.wcwrg.org/
- Water Resources East - https://wre.org.uk/
- Water Resources North - https://www.waterresourcesnorth.org/
- Water Resources South East - https://www.wrse.org.uk/

[20] Sometimes referred to in earlier forms as "Method Statement: Regional Plan Reconciliation".

Appendix 2: Reconciliation 3 meetings

No.	Date	Regions	Attendees	Coverage
1	1st March 2023	WRSE + WRW	Richard Blackwell (WRW), Meyrick Gough (WRSE), Justin Bailey (STW), Neil Upton (UU), Mark Smith & Zara Barrett (Hydro-Logic, support)	• Reconciliation timetable & dependencies • Progress update on WRSE modelling • Consultation feedback and implications • Discussion on next steps
2	6th March 2023	WRSE + WRW	Richard Blackwell (WRW), Meyrick Gough (WRSE), Justin Bailey (STW), Doug Clarke (STW), Beverley Pixton (UU), Neil Upton (UU), Mark Smith & Zara Barrett (Hydro-Logic, support)	• Results of WRSE modelling • Confirmation of date/ volume of STT/ GUC option selections across 3 scenarios • What additional evidence is required for reporting?
3	15th March 2023	WReN + WRE	Ben Fitzsimons (WRE), Jo Ledger (WRE/ Anglian), Granville Davies (WReN), Mark Smith & Zara Barrett (Hydro-Logic, support)	• Discussion on transfer potential • Review previous WReN-WRE transfer position from Spring 2022 Reconciliation 2 report
4	15th March 2023	WCWRG + WRSE	Meyrick Gough (WRSE), Steve Lanzon (WW), Sarah Green (Mott MacDonald, for WRSE), Mark Smith & Zara Barrett (Hydro-Logic, support)	• Confirmation of water availability from WCWRG • Confirmation of Mendip option status in this round of planning
5	15th March 2023	WRSE + WRE	Meyrick Gough (WRSE), Jo Ledger (WRE/ Anglian), Ben Fitzsimons (WRE), Mark Smith & Zara Barrett (Hydro-Logic, support)	• Discussion the availability of water between the regions and current no transfer option • Explore short-term needs of Cambridge Water
6	17th March 2023	WRE + WRW	Ben Fitzsimons (WRE), Richard Blackwell (WRW), Marcus O'Kane (STW), Josh Fothergill (Fothergill Training and Consulting, in-combination assessments) and Mark Smith (Hydro-Logic, support)	• GUC interdependency between WRW-WRSE-WRE • Other potential transfers between regions • Narrative on Lincs Reservoir location • In-combination assessments and impacts
7	20th March 2023	WRSE + WRW	Meyrick Gough (WRSE), Richard Blackwell (WRW), Doug Clarke (STW), Justin Bailey (STW), Neil Upton (UU), Mark Smith & Zara Barrett (Hydro-Logic, support)	• Results of Severn Trent modelling and selection of Vyrnwy option in WRW • Update on WRSE modelling • Update on WRE discussion re. GUC • Reconfirmation of date/volume of STT/GUC option selections across 3 scenarios • Reconciliation of Birmingham Canal Network Surplus (Oxford Canal option for WRSE vs Blithfield option for South Staffs)
8	20th April 2023	WRW + WReN	Richard Blackwell (WRW), Doug Clarke (Severn Trent), Colin Church (Severn Trent), Justin Bailey (Severn Trent), Matthew Postlewaite (WRW), Hydro-Logic, support - Zara Barrett, Mark Smith. Apologies: Granville Davies (WReN)	• Discuss outcomes of WRW / STW and WReN / YW meetings previously • Affirm STW position statement on export to YW and transfer cessation • Confirm definition of alternative pathway • Review other transfer option positions

Appendix 3: Severn Thames Transfer development need

Section 2 shows the WRSE and WRW reconciliation position under different alternative scenarios, with the Severn Thames Transfer (STT) selection being influenced by changes to the supply-demand balance or strategic option position in WRSE. The STT and support options, in different configurations, have featured in a wide range of model runs and/or reconciliation scenarios across three rounds of reconciliation.

In order to be clear on the need for the STT to continue progressing so it could be available if needed in future, WRSE, WRW, Thames Water, United Utilities and Severn Trent have jointly agreed a short position statement. These common words are to be included in their Statements of Response and revised plans, and are also included below:

The need to keep developing the Severn Thames Transfer scheme[21]

The Severn Thames Transfer (STT) represents a strategic resource option that facilitates the transfer of water from the River Severn to the River Thames. This would be supported by several sources of water[22] from United Utilities and Severn Trent.

During the development of the draft regional plans and Water Resource Management Plans STT was selected as part of the WRSE regional solution, in conjunction with other schemes, in 2050. This was also reflected in WRW's plans.

Whilst STT featured in both regions' draft preferred plans, a series of sensitivity tests at the time showed that the STT could be selected as early as 2039, if the South East Strategic Reservoir Option (SESRO) could not be developed, or not at all if government water efficiency policies resulted in a lower demand forecast due to increased water efficiency.

In March 2023 the regional reconciliation process began its third round. At this time none of the regions had finalised a preferred revised regional plan. Therefore, sensitivity runs were undertaken to explore what might happen under certain scenarios. This scenario modelling used the updated STT data, but some other information in the WRSE model was based on the draft plan.

The scenario testing approach confirmed that if the WRSE companies met the 110 l/p/d PCC target by 2050 then STT was not selected in the reported pathway (preferred plan). Sensitivity tests also confirmed the need for STT in scenarios without SESRO or with government water efficiency interventions not reducing demand to the levels anticipated. Therefore, the need for STT inclusion in an adaptive plan was confirmed. Given that the revised draft plan was still under development for WRSE, but we knew that the revised regional plan would seek to achieve the 110 l/p/d PCC guidance target, the more likely scenario was that STT would not be required in the preferred plan for WRSE or WRW. This was the agreed outcome of reconciliation for inclusion in the revised draft WRMPs, which includes adaptive pathways to deal with potential changes.

Although the water companies are working toward mitigating those risks through their plans, they are influenced by factors outside of the control of the companies and therefore have a reasonable likelihood of occurring. The adaptive pathways recognise different potential outcomes. In either case,

[21] From the document *WRSE_WRW_STT need - joint statement_clean copy 05.05.23.docx*
[22] The North West Transfer enabling use of Vyrnwy Reservoir, and recycling water from Minworth and Netheridge.

there is a need to progress development of the STT system[23] in the next 5 years so it can be delivered by 2039 if required.

As the regional plans continue to be developed the risks associated with the promotion of certain schemes or delivering the water efficiency targets, set out in the Environment Improvement Plan, remain. Both regions have developed a series of adaptive regional plans to help offset some of this risk.

The adaptive regional plans consider three scenarios:

1. benign scenario in which schemes and assumed savings from water demand reduction measures are delivered (this is aligned to the reported pathway/preferred plan)
2. a short term adverse scenario in which preferred supply options aren't delivered and STT is then required to be developed and operational by 2039/40; and
3. a long term adverse scenario in which the projected demand management savings do not materialise and additional water from STT is required by 2050.

Through this approach both regions would monitor the delivery of the schemes and benefits of their plans to understand if their plans are still on track or whether they need to adapt to one of the scenarios above.

For the regional plans to remain flexible and adaptive it is critical that key schemes are progressed in a timely manner. In the case of STT and the potential for it to play a part in the short term adverse scenario this would require development of the scheme to continue over the next AMP period (2025 to 2030) and through the next gates to provide confidence that the scheme could be utilised when required. Proposed milestones are under development and in discussion with RAPID to be reflected in future gate submissions.

Therefore both regions and relevant companies are promoting the continued development of the STT system in their WRMPs, Regional Plans and business plans to provide confidence to regulators and the Secretary of State that their plans are robust and can adapt to meet their statutory duties in the future. This jointly agreed text demonstrates alignment of the companies and regions on this need to solve national water resources risks identified in the National Framework.

[23] STT System includes the STT and the sources that feed water to the STT, namely Severn Trent Sources (Netheridge), Minworth and the North West Transfer. Changes to the flow regime in the Severn catchment due to releases, interactions with the Severn Regulation Scheme, a bypass pipeline for the Afon Vyrnwy and system operation are within the scope of the STT project.

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