

Regulators' Alliance for Progressing  
Infrastructure Development

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# Strategic regional water resource solutions: Standard gate one final decision for Severn Trent Sources



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## 1. Introduction

The purpose of this publication is to set out our final decision in respect of the Severn Trent sources (STS) solution submitted for the standard gate one assessment by solution sponsor Severn Trent Water<sup>1</sup>. The solution includes two options, to utilise unused abstraction licence volumes at Mythe water treatment works and treated discharge from Netheridge waste water treatment works, as support for the River Severn to Thames Transfer solution. The solution proposes to utilise both. Further information concerning the background and context of the Severn Trent Water Severn Trent sources can be found in the Severn Trent sources publication document on the [Severn Trent Water](https://www.severntrent.com/content/dam/stw-plc/about-us/gate-1-submission-severn-trent-sources.pdf) website<sup>2</sup>.

This publication should be read in conjunction with the final decision letter issued to each solution sponsor. Both this document and final decision letters have been published on our website today.

The assessment process is overseen by RAPID, with input from the partner regulators Ofwat, the Environment Agency and the Drinking Water Inspectorate. The Environment Agency together with Natural England and, where a solution impacts Wales, Natural Resources Wales, have reviewed the environmental sections of the submissions, and have provided feedback to RAPID. The Consumer Council for Water provided input to the assessment on customer engagement.

The solution sponsors and other interested parties had the opportunity to respond to the draft decision during the representation period, which followed the publication of the draft decisions on 14 September 2021. We have taken all relevant representations into account in making our final decision.

We would like to thank Severn Trent Water for the level of engagement, collaboration, and innovation that it has exhibited during this stage in the gated process.

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<sup>1</sup> Referred to in PR19 final determination as “Severn Trent sources”

<sup>2</sup> <https://www.severntrent.com/content/dam/stw-plc/about-us/gate-1-submission-severn-trent-sources.pdf>

## 2. Solution summary

Severn Trent Sources solution investigates providing new water resource through existing and unused WTW licenced abstractions, or WwTW treated dry weather flow. The solution is a supporting solution to the River Severn to River Thames (STT) solution, which may utilise the water resource to support its transfer.

**Figure 1 STS solution schematic**



The source options for providing new water resource are Mythe water treatment works, and Netheridge waste water treatment works. The benefit and configuration of the two source options are detailed below, but the STS solution submission also states both 1 and 2 can be used in unison to maximise the benefit presented by the solution.

- **Mythe WTW:** 15 Ml/d of the existing but unused abstraction licence can be left to the River Severn in a 'put' arrangement, to be utilised by other solutions; and
- **Netheridge WwTW:** diverts 35Ml/d of the constant dry weather flow portion of treated wastewater away from River Severn to discharge instead to one of the two STT interconnector options:
  - **Deerhurst Pipeline Interconnector**, which itself has 2 potential connection locations;
  - **Costswolds Canals Interconnector**, which itself has 2 potential connection locations.

## 3. Summary of representations

### 3.1 Representations received

We have received the following representations relevant to Severn Trent Sources.

**Table 1 Summary of representations**

| Representation from                                      | Summary of representation   |
|--|---|
| <p><b>Group Against Reservoir Development (GARD)</b></p> | <p><b>Transparency of cost estimates</b><br/>GARD cites concerns over a lack of transparency in solution cost estimates generally, requesting further detail to the level that was included in the Fens reservoir gate one report.</p> <p><b>Deployable output and stochastic flow data</b><br/>GARD is also concerned about a lack of transparency in deployable output (DO) assessments, suggesting the evidence should be made available for scrutiny of the assumptions, data, and outputs of the modelling.</p> <p>GARD have concerns over the reliability of stochastic river flow data, such as: inaccurate weather data for groundwater-dominated catchments; the stochastic weather base period not containing any long duration droughts; the base period excluding weather since 1997; and the geological difference in catchments not being reflected in the generated Thames and Severn flows.</p> <p><b>Carbon costing</b><br/>GARD asserts that the gate one reports are poor on the subject of carbon costing of strategic options and have shortcomings in the data presented.</p> <p><b>Supporting solutions</b><br/>GARD considered it is unnecessary and confusing to have separate reports for River Severn to River Thames Transfer (STT) and its supporting solutions, which results in there being no clear picture of overall deployable outputs (DO) and costs of the solutions and sub options and suggested combining these into a single solution.</p> <p>GARD suggested that consideration should be given to an enhanced first phase of water resource supply support, by combining the unsupported transfer (phase 1) with Mythe (phase 2) and bringing in Vyrnwy regulation (phase 3) to a level that requires minimal new source development for United Utilities. This could be implemented rapidly and would 'buy time' while the</p> |

|                            |  |
|----------------------------|--|
|                            | <p>actual future need and the effects of climate change can be observed, and facilitate early relief of chalk stream over-abstraction.</p> <p>GARD are also disappointed that the gate one report has no tabulation of the costs and deployable outputs for each phase of the development shown in Table 2-2 of the STT submission document and for the total cost and deployable output after each phase is commissioned. GARD propose that RAPID requires the water companies to provide this information in time for inclusion in RAPID’s recommendation reports for Ofwat and for review by stakeholders in the ‘representation period’.</p> <p><b>Solution Design</b><br/>Lack of detail justifying the amounts of effluent available for reuse from the Netheridge STW</p>   |
| <p><b>Severn Trent</b></p> | <p><b>Actions &amp; Recommendations</b><br/>Severn Trent are confident the planned gate two programme will address the solutions gate one actions and recommendations, and that contribution will also come from activities undertaken through the Severn to Thames Transfer solution.</p> <p>Severn Trent are awaiting clarification on recommendation 2 as do not believe any customer change of supply source will be directly caused by this SRO.</p> <p><b>Environment assessment</b><br/>Severn Trent Water have provided comment acknowledging the environmental score in the gate one assessment is 'satisfactory' and would welcome further discussion to address concerns effectively.</p> <p><b>Costs</b><br/>Severn Trent provided revised final gate one costs, which were £40,349 lower than their previously submitted costs, primarily due to lower than anticipated internal programme management costs.</p> <p>Severn Trent requested access to gate one underspend using it at gate two to deliver a high-quality output supporting regional planning needs and meet regulators expectations.</p> |

## 3.2 Our Response

We have taken the representations into account in our final decisions and set out below our response to the key points and issues raised.

### 3.2.1 Transparency in cost estimates

We do not consider information about solution costs to be material to gate one decisions. Gate one is a checkpoint and is the first opportunity to check the progress made by solution owners on investigations and development of solutions in the gated process. At gate one, all solutions were expected to progress to gate two and continue to receive ring-fenced funding unless there was a clear reason why they should not.

Solution costs will be considered further from gate two onwards and in regional plans and water resource management plans. We will provide companies with guidance on presenting and publishing solution costs in their gate two submissions.

### 3.2.2 Deployable Output assessments and stochastic flow data

We consider that the work completed on the DO assessment is sufficient for gate one. The water companies will continue to develop the solutions and evidence surrounding them. Guidance will be provided on our expectations for a more detailed examination of deployable output at gate two. The use of stochastic flow data reflects the requirement to test droughts larger than those observed in the historic record, such as drought events with 1:500 year return periods. Solutions generation of stochastic flow data is expected to follow Water Resource Planning Guidelines Supplementary Guidance: Planning to be resilient to a 1 in 500 drought (England), and Supplementary Guidance: Stochastics. We will pass on the specific points raised to solution owners for consideration as they develop their deployable output assessments further.

### 3.2.3 Carbon costing

Gate one assessment of solution submissions took account of the fact that assessments of the carbon implications of the solution would inevitably contain a significant degree of uncertainty given the stage of solution development. We consider that the level of information presented on carbon was sufficient for gate one. Solution development to gate two should follow the Water Resources Planning Guidelines for WRMP24 section 8.3.2 which states expectations for accounting for and reducing greenhouse gas emissions. The design should consider; build nothing, build less, build clever and build efficiently throughout the

development of the solution, with offsetting only as a last resort. We expect all direct mitigations to be included in the solution costs. The solution should also be considered by the water company within their wider carbon plans.

We will require any carbon assessment annexes to be published alongside the submission at gate two.

### **3.2.4 Supporting solutions**

We have decided that Severn Trent Sources and other supporting solutions should continue to be developed separately to STT. As water resources planning and the gated process advances, these supporting solutions may provide resilience benefits to their own regions, to other solutions or to other regions beyond those served by the transfer. Linking supporting solutions development, and their ability to progress through the Gated Process, exclusively to STT, could hinder investigation of these alternate configurations and their benefits.

We consider the phasing of supporting solutions of STT should be determined by the solutions' utilisation assessments under future extreme drought, climate change and demand scenarios. RAPID will set out expectations for detailed utilisation assessments in its gate two guidance, and has included specific actions and recommendations in respect of these. This includes incorporating the cost and water resource benefit of supporting solutions, including Severn Trent Sources, into phasing decisions.

### **3.2.5 Solution yield**

The STS submission provided dry weather flow justification for sustainable yield from Netheridge STW. RAPID expect further detail, including modelling, and climate change analysis, on yields and resilience at gate two as will be set out in forthcoming gate two guidance. RAPID have also set out STS actions 1, 2 and recommendation 1 (Section 6 of this final decision document), to track work and progress against these expectations.

### **3.2.6 Gate one actions and recommendations**

We agree with Severn Trent that the solution does not involve a change in supply source for customers and have removed the recommendation from the gate one final decision actions and recommendations in the Appendix.

### **3.2.7 Environment assessment**

RAPID and NAU are happy to discuss approaches and gate two activities to support Severn Trent in effectively addressing concerns identified by the environment assessment at gate one.

### **3.2.8 Utilisation of gate one underspend at gate two**

Some solution owners raised concerns in their representations regarding whether gate two allowances would be sufficient for completion of gate two activities and suggested that gate one underspend should be carried forward to gate two. The percentage allocations to each gate in our Final Determination at PR19 were inherently imprecise and were based on our understanding of likely profile of activities to be carried out in progressing the development and investigation of solutions taking into account companies' proposals in this respect. We now have an improved understanding of the activities to be carried out at gate two and consider that it will be beneficial to allow funding allowance that has not been used at gate one to be made available to solution owners for carrying out gate two activities.

We have therefore decided to merge gate one and gate two allowances for this solution. This will allow any underspend on gate one activities to be used for gate two activities. We will continue to scrutinise expenditure to ensure that it is appropriate and efficient. Companies remain responsible for management of cost risk to meet gate requirements.

## 4. Solution assessment summary

**Table 2** Final decision summary

| Recommendation item   | Severn Trent sources |
|---|----------------------|
| Solution sponsors   | Severn Trent Water   |
| Should further funding be allowed for the solution to progress to gate two? | Yes                  |
| Is there evidence all expenditure is efficient and should be allowed?       | Yes                  |
| Delivery incentive penalty?   | No                   |
| Is there any change to partner arrangements?                                | No                   |
| Is there a need for a remediation action plan?                              | No                   |
|   |                      |

### 4.1 Solution progression and funding to gate two

The evidence suggests that the solution is a potentially valuable way of supplying water to customers. Based on our assessment of the potential solution costs and benefits we have concluded that the solution should progress through the gated process to gate two, and that further funding should be allowed.

We are not changing the funding of this solution. This solution's total allowance and gate allowances remain the same as the final determination.

We have decided to merge the gate one and gate two allowances. This results in a total allowance of £1.057m being available at gate two. Companies remain responsible for management of cost risk to meet gate requirements.

### 4.2 Evidence of efficient expenditure

The PR19 final determination specified that any expenditure on activities outside the gate activities for the identified solutions (or solutions that transfer in) will be considered as inefficient and be returned to customers. We will consider whether gate activity is efficient by considering the relevance, timeliness, completeness, and quality of the submission which should be supported by benchmarking and assurance.

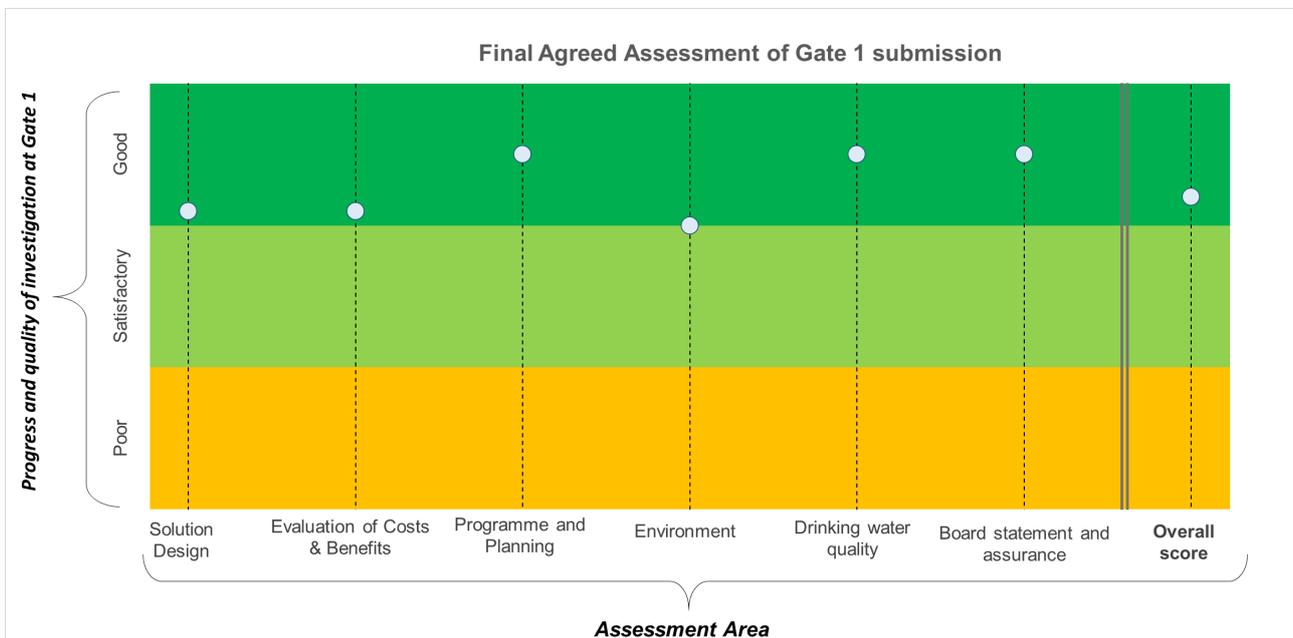
Our assessment of the efficient costs as spent on gate one activities results in an allowance for this solution of £0.268m (of £0.268m claimed). This is the final reconciled spend.

## 4.3 Quality of submission

The aim of the assessment was to determine whether appropriate progress has been made towards delivery of the solution. We recognise at this stage solutions may be at different development points and the assessment takes this into account.

Figure 2 shows our assessment of the work completed on the solution, which was presented in the submission. Our assessment was made against the criteria of robustness, consistency and uncertainty to grade each area of the submission as good, satisfactory or poor in accordance with [our guidance published on 22 February 2021](#)<sup>3</sup>. We also assessed the Board assurance provided.

**Figure 2 Submission Assessment**



Our overall assessment for the solution submission is that it is good (meets expectations). However, there remain some specific assessment elements where the submission fell short of expectations, which are detailed in the remainder of Section 2.

### 4.3.1 Solution Design

Our assessment of the solution design considered the quality of the evidence provided on the initial solution and options; the anticipated operational utilisation of solutions; the interaction of the solution with other proposed water resource solutions and stakeholder and

<sup>3</sup> <https://www.ofwat.gov.uk/publication/rapid-strategic-regional-water-resource-solutions-guidance-for-2021/>

customer engagement. The assessment also considered whether information was provided on the context of the solution's place within company, regional and national plans.

We consider that the progress and quality of the investigation completed by Severn Trent Water in developing the solution design at gate one has been good. The submission evidence still fell short of expectations on some specific assessment elements, including the depth of understanding of the solution's utilisation, and the level and detail of engagement with specific stakeholders beyond those associated with the Regional Group. We acknowledge that the submission highlights additional work to be undertaken in both these areas through gate two.

### **4.3.2 Evaluation of Costs & Benefits**

Our assessment of the evaluation of costs and benefits considered the quality of the information provided on initial solution costs; the societal, environmental and economic cost and benefits, water resource benefits and wider resilience benefits. The assessment also considered whether evidence was provided on how the solution delivers a best value outcome for customers and the environment.

We consider that the progress and quality of the investigation completed by Severn Trent Water in evaluating the costs and benefits of the solution at gate one has been good. The submission evidence still fell short of expectations on some specific assessment elements, including the investigation of wider resilience benefits the solution may bring (beyond the resilience of the solution itself), and the discussion of best value of the solution's options, or the solution as a whole.

### **4.3.3 Programme and Planning**

Our assessment of the programme and planning considered whether Severn Trent Water presented a programme with key milestones and whether its delivery is on track. The assessment also considered the quality of the information provided on risks and issues to solution progression, the procurement and planning route strategy and subsequent gate activities with outcomes, penalty assessment criteria and incentives.

We consider the evidence provided by Severn Trent Water regarding the programme and planning, risks and issues and the procurement and planning route strategy for the Severn Trent Sources solution to be of good detail and quality for gate one.

As a key theme for gate two, we would particularly like to ensure that environmental regulatory barriers and risks are understood, along with progression of associated mitigation measures.

#### 4.3.4 Environment

Our assessment of environment considered the initial environmental assessment; the identification of environmental risks and an outline of potential mitigation measures; the detailed programme of work used to address environmental assessment requirements and the initial outline of how the solution will take into account the carbon commitments.

We consider that the progress and quality of the investigation completed by Severn Trent Water in evaluating the environmental elements of the solution at gate one has been satisfactory. The submission evidence falls short of gate one expectations on environment in some areas, including work required to assess and understand the impact and risks of the solution on water bodies meeting their environmental objectives under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017.

#### 4.3.5 Drinking water quality

Our assessment of drinking water quality considered drinking water quality and risk assessments; evidence that the solution has been discussed with the drinking water quality team and a plan for future work to develop Drinking Water Safety Plans (DWSPs).

We consider that the information provided in this submission on drinking water quality risks, stakeholder engagement and DWSPs for gate one was good. We expect to see further development of DWSPs, water quality monitoring, including for emerging contaminants, and wider stakeholder engagement with ongoing dialogue with the respective water quality teams in gate two.

#### 4.3.6 Board Statement and assurance

The evidence provided relating to assurance has been assessed as good. Severn Trent has provided a Board statement that indicates:

- its support of submission recommendations for solution / option progression;
- it is satisfied that progress on the solution is commensurate with the solution being construction ready for 2025–30;
- it is satisfied the work carried out to date is of sufficient scope, detail and quality as would be expected for a large infrastructure project of this nature at this stage; and
- that expenditure has been incurred on activities that are appropriate for gate one and is efficient.

This statement is accompanied by an explanation of the approach to assurance and a description of the evidence and information that the Board has relied on in giving the statement.

## 5. Proposed changes to partner arrangements

There are no proposed changes to partner arrangements.

As part of gate one discussions, in agreement with relevant solution sponsors and at Severn Trent's request, we agreed that the Shrewsbury Redeployment option would be investigated as part of the River Severn to River Thames transfer solution rather than as an option within Severn Trent sources.

## 6. Actions and recommendations

Where the submission has not been assessed as ‘meeting expectations’ we have provided feedback on where we will seek remediation of the issues. We have also identified specific steps that solution owners should take in preparing for gate two.

We have categorised these remediation issues and steps into priority actions, actions and recommendations.

Priority actions are those that should have been completed at gate one and must now be addressed on a short timescale in order to make sure the solutions stay on track. They require urgent remediation in full and for this reason directly relate to the assessment of delivery incentives set out in this publication. The response to the priority actions will determine whether a delivery incentive is imposed; and the extent to which the delivery incentives can be mitigated by the solution sponsors. If all priority actions are satisfactorily completed then the penalty will not be imposed. If one or more of the priority actions are not satisfactorily completed then the whole of the penalty will be imposed.

We have also identified actions that should be addressed in full in the gate two submission. The response to these actions will influence the assessment of the gate two submission.

Recommendations are issues where additional information or clarification could improve the quality of future submissions.

No priority actions have been identified for Severn Trent Sources, therefore we do not require the solution sponsor to provide us with a remediation action plan. The full list of other actions and recommendations can be found in the appendix.

## 7. Gate two activities

The solution will continue to be funded to gate two as part of the standard gate track.

For its gate two submission, we expect Severn Trent Water to complete the activities listed in the [PR19 final determinations: strategic regional water resources solutions appendix](#) as expanded on in Section 15 of its gate one submission.

## 8. Incentives for gate two

For gate two we maintain the same arrangements for incentives as applied in gate one – that is, a maximum penalty of 30% of company’s total efficient gate funding that could be applied to solutions that have not made adequate progress, where work is of inadequate quality, or the submission deadline is missed.

Penalties will be determined on a case by case basis taking into account:

- the level of completeness and the overall quality of the work carried out in investigating and developing the solution based on the evidence summarised in the submission;
- the evidence and justification provided where aspects of the work carried out fall short of expectations; and
- the impact on the decisions and delivery of solutions, including the extent to which deficiencies adversely impact customers.

Penalties will be applied through the PR24 reconciliation mechanism, as described in ‘[PR19 final determinations: Strategic water resource solutions](#)’.

There will be no opportunity to remediate deficiencies identified at the assessment in order to defer penalties.

## Appendix: Actions and Recommendations

| <b>Actions – to be addressed in gate two submission</b> |                  |   |
|---|------------------|---|
| <b>Number</b>   | <b>Section</b>   | <b>Detail</b>   |
| 1   | Solution Design  | Ensure that further detailed utilisation calculations are undertaken early in gate two in order to feed into environmental assessments.   |
| 2   | Costs & Benefits | Complete drought resilience modelling, taking into account possible restrictions resulting from the ‘River Severn Drought Order’, which applies to the Mythe abstraction licence.   |
| 3   | Costs & Benefits | Ensure that best value analysis (following relevant guidelines) is undertaken and presented for all options within the solution, with a focus on incorporating environmental, societal, and economic costs. Link into discussions of best value of this and other enabling solutions for dependant solutions (e.g. Severn Thames Transfer). |
| 4   | Environment      | Update status and deterioration risks under the (Water Framework Directive) (England and Wales) Regulations 2017 , with particular attention paid to: Class used; standards used; Chemicals; <10% deterioration; Impact at permit limits.   |
| <b>Recommendations</b>                                  |                  |   |
| <b>Number</b>   | <b>Section</b>   | <b>Detail</b>   |
| 1   | Solution Design  | Develop utilisation figure during key drought events (such as 1:500 year events). This development would require input from other solutions/ regional models. Ensure lead in time for supply, dependent on solutions stand-by operating status, is represented in any receiving solutions decision making.                                  |
| 2   | Solution Design  | Further engage customers on change of supply source as a result of implementing this solution.  |
| 3   | Costs & Benefits | Further consider social and amenity value, if this is limited due to type of solution, this can be explained in the submission.   |
| 4   | Costs & Benefits | Further investigate potential opportunities of wider resilience benefits brought about by specific options within this solution. We recognise types of solution may limit the opportunities available.  |



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