Regulators' Alliance for Progressing Infrastructure Development

December 2021

Strategic regional water resource solutions: Standard gate one final decision for River Severn to River Thames Transfer

Ofwat

Contents

1. Introduction

The purpose of this publication is to set out our final decision in respect of the River Severn to River Thames transfer, strategic regional water resource solution submitted for the standard gate one assessment by solution sponsors Thames Water, Severn Trent Water and United Utilities[1]. The solution would enable transfer of supply from the River Severn to the River Thames, with the solution investigating two potential routes, a pipeline from Deerhurst to Culham, or reinstating the Cotswold Canal from Gloucester Dock to Culham. Further information concerning the background and context of the Thames Water, Severn Trent Water and United Utilities River Severn to River Thames transfer can be found in the River Severn to River Thames transfer publication document on the Thames Water[2], Severn Trent Water[3] and United Utilities[4] websites.

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 Thames Water, Severn Trent Water and United Utilities for the level of engagement, collaboration, and innovation that they have exhibited during this stage in the gated process.

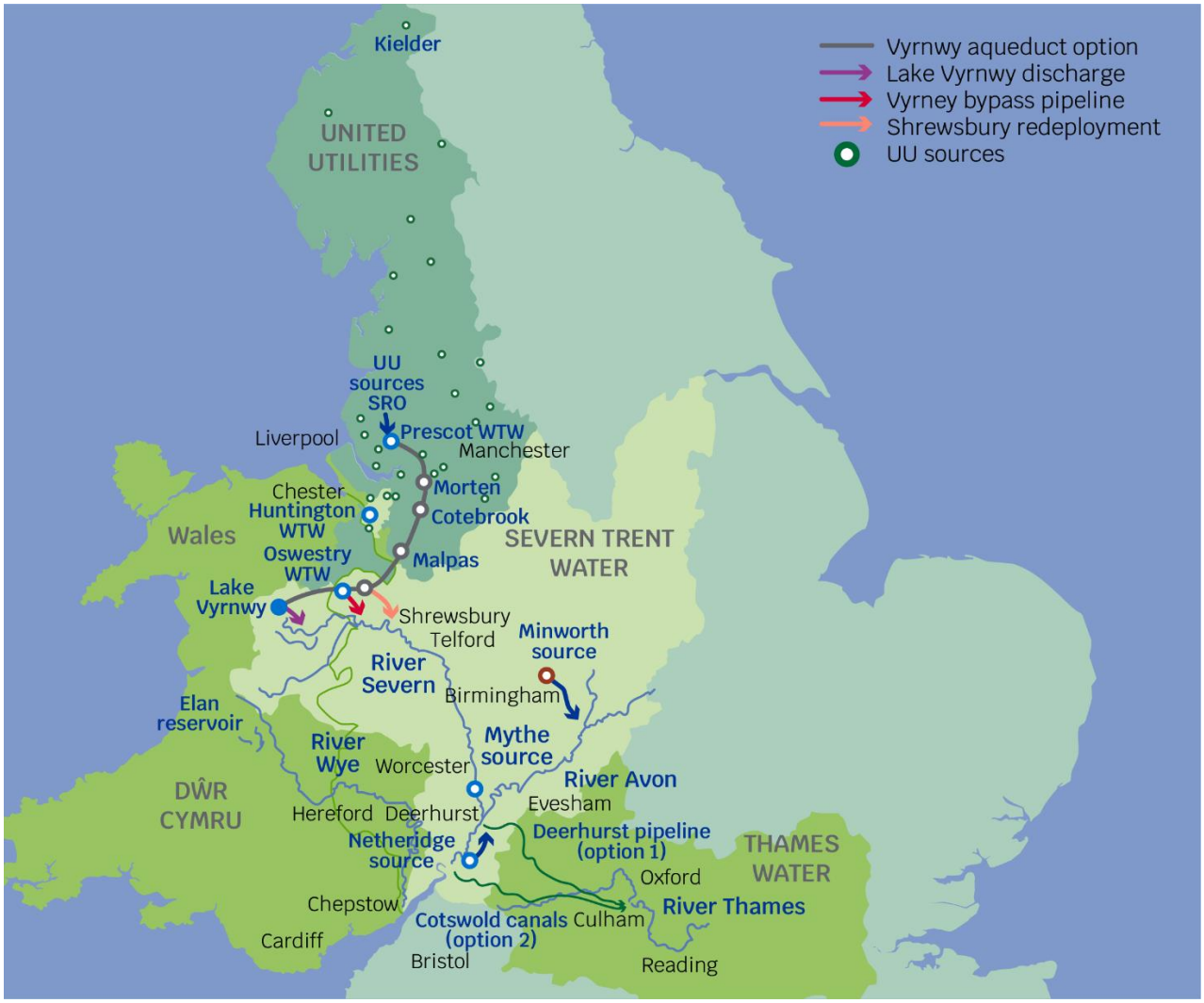
[1] Referred to in PR19 final determination as "River Severn to River Thames transfer"

[2] gate-one-submission-stt.pdf (thameswater.co.uk)
[3] gate-1-submission-stt.pdf (severntrent.com)
[4] preliminary-feasibility-assessment-inc.-glossary.pdf (unitedutilities.com)

2. Solution summary

The Severn to Thames Transfer (STT) solution would transfer water from the North West and Midlands to the South East, by transferring water from the River Severn to the River Thames.

Figure 1 STT solution schematic



The solution includes two options for the interconnector to link the River Severn and River Thames:

1. A pipeline option from Deerhurst to Culham has been considered with alternative capacities of 300Ml/d, 400Ml/d, or 500Ml/d; and

2. An option to reinstate parts of the Cotswold Canals and augment with pipelines and pumping stations from Gloucester Dock to Culham to provide a capacity of 300Ml/d.

Additional infrastructure would also be required such as a pre-treatment plant at the head of the pipeline at Deerhurst or at the end of the Cotswold Canals at Culham.

The solution can transfer some unsupported flow elements from the River Severn, but also requires supporting solutions to boost the supply of water for transfer under certain flow conditions. The supporting solutions, which are under development as independent solutions in the RAPID programme, are:

- Vyrnwy Aqueduct and United Utilities sources (these facilitate the release from Lake Vyrnwy) – up to 180 Ml/d;

- Severn Trent Sources: Mythe abstraction licence (15 Ml/d) and Netheridge Wastewater Treatment Works (35 Ml/d) – up to 50 Ml/d;

- Minworth reuse – up to 115 Ml/d.

3. Summary of representations

3.1 Representations received

We have received the following representations relevant to the River Severn to the River Thames transfer.

Table 1 Summary of representations

Representation from	Summary of representation
Colne Valley Fisheries Consultative	**Solution Design** The Consultative support increased water storage in the Thames Basin but not inter-basin raw water transfer. The Consultative are concerned that inter-basin raw water transfer may result in the net loss of water between the two rivers, with increased probability of drought impacting both catchments at the same time, making any transfer unsustainable. **Environment** The Consultative comments that inter-basin water transfers present major pathways of freshwater invasion by non-native species, providing a direct link for invasive spread between previously isolated catchments. The habitat of the receiving catchment may be modified such that it becomes more favourable for the establishment of novel invasive species. Studies examined the impact of inter-basin water transfer on the River Severn and Thames and found that there was a serious risk of further spread of species, particularly of quagga mussel which presents a huge environmental threat but are also one of the top invasive species that could negatively impact the water industry.
Group Against Reservoir Development (GARD)	**Transparency of cost estimates** 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. **Deployable output and stochastic flow data** 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. GARD are also disappointed that the STT gate one report has no tabulation of the costs and deployable outputs for each phase of the development. 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'. 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. **Carbon costing** 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. **Supporting Solutions and phasing** GARD consider 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. GARD suggest 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 actual future need and the effects of climate change can be observed, and facilitate early relief of chalk stream over-abstraction. **Solution Design** GARD support the use of the Cotswold canal if it can be shown that a 300 Ml/d transfer is sufficient and the canal is a better option than transferring via the pipeline from Deerhurst. **Water Resource Benefits** GARD agree with unsupported transfer as a first phase (before support phases from Mythe and Vyrnwy reservoir). But are sceptical of deployable output of only 80 Ml/d for the unsupported transfer, and would like to see full details of the model output that generated this figure. GARD are pleased to see a 'put and take' regulated abstraction arrangement agreed by Environment Agency and Natural Resources Wales at Deerhurst, and applaud this common sense approach. Since the WRMP19 investigations of the STT, the total

	hands-off flow at Deerhurst is understood to have been increased from 1850 Ml/d to 2560 Ml/d, which is likely to have substantially reduced the deployable output of STT options, but there is no mention of this crucial information in the gate one report and no evidence is provided to justify the new hands-off flow. In view of the significance of the Deerhurst hands off flow for the deployable output and cost-effectiveness of STT options, RAPID should require the Deerhurst hands-off flow to be the subject of a rigorous and transparent investigation in gate two. This investigation should take account of the frequency and duration of the abstractions for the STT at Deerhurst and consider variations in the abstraction constraints, possibly on a seasonal basis, that might allow more water to be taken at Deerhurst without unacceptable impacts. RAPID should require this investigation to be undertaken collaboratively with the existing STT investigation team, so that the implications of changing the hands-off flow are fully understood by both the ecologists seeking to protect the Severn estuary and the engineers looking to maximise the benefits of STT options. GARD disagreed with limitations of 75 Ml/d direct releases to River Vyrnwy (which would also impact on the capacity sub-options of Vyrnwy Aqueduct), which has been set due to impact on Salmonid spans and juveniles. GARD have provided their own flow analysis to support their request that regulation releases up to 400 Ml/d should be considered direct into the River Vyrnwy. GARD disagreed that Lake Vyrnwy releases (and thus offset capacities from United Utilities Sources) should be limited to 180 Ml/d, as this assumes the reservoir is operated as a continuous direct supply. GARD state that as regulation releases are required for only part of the year, even in severe droughts, Vyrnwy reservoir has the storage capacity to support much larger regulation releases than 180 Ml/d. GARD request RAPID recommend that releases of up to 400 Ml/d are considered in gate two. GARD understood that regulation losses of 20% between Vyrnwy dam and Deerhurst have been assumed, but investigations of the losses will continue into gate two. GARD believe historic flow records evidence at much less than 20%, especially during the long duration regulation releases that will be needed in droughts that determine the scheme deployable output. GARD believe future losses work should include: A ‘water balance’ approach to assessing the losses; Assessment of the reduced losses that will continue during long duration droughts; Assessment of the gains in River Severn flows due to water seeping from the banks back

	into the river on cessation of regulation; Experience of regulation losses in other major regulation schemes. **Procurement** There is no consistent view on how the transfer, and its components should be procured, owned and operated. A working party could be established to consider all the procurement, ownership, and operation options for the transfer and to recommend a unified approach.
Oxfordshire County Council	**Solution Design** The County Council favour the use of existing or refurbished infrastructure, such as the canal transfers, or infrastructure which is underground, such as pipes. RAPID should ask that assessments identify the impacts of the various options on local populations, both during construction and afterwards. **Environment** The County Council are concerned at the permanent transport, flood risk, biodiversity, heritage, landscape effects, and temporary construction effects of options affecting Oxfordshire. In agreement that there is a need for further assessment of social, economic and amenity costs & benefits **Water Resource Benefit** The transfer is one of the more expensive options. Any strategic option should only be pursued with a full understanding of the forecast need for additional water and the water savings that can first be achieved through reduced pipe leakage, innovation, and reduced water consumption.
South Oxfordshire District Council	**Environment** The proposed Severn to Thames pipeline may involve pumping water uphill which can require significant amounts of energy – carbon footprint of all schemes should be assessed and made public. There could be a significant environmental impact. It is also not clear whether it is possible for this solution to achieve net biodiversity gain. Yet it is noted that this project has been allowed to proceed to the next gate. The regulator should require additional information before progressing solution to the next gate.
United Utilities, Severn Trent, and Thames Water	**Costs** The reconciliation of gate one expenditure has resulted in the total for programme management and tripartite workstreams reducing by 25%. Total of 12.5% reduction in costs for gate one. The solution team provided further details of the Tripartite and Project Management activities.

Vale of White Horse District Council	**Environment** Information on the carbon footprint of this solution should be made public. Could be a significant environmental impact from the transfer. It is not clear whether it is possible for this solution to achieve net biodiversity gain. Yet it is noted that this project has been allowed to proceed to the next gate. It could be more appropriate for the regulator to require additional information before progressing to the next gate.

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 Solution design

Supporting Solutions and phasing

We have decided that 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 in recommendation 4. This includes incorporating the cost and water resource benefit of supporting solutions into phasing decisions.

Solution options

We expect the solution owners to decide which option to progress further at gate two. To ensure appropriate option selection at gate two RAPID expect comprehensive best value assessments of solutions options that take into account social (including amenity) costs and benefits, in addition to environmental, water resource and economic costs and benefits. Best value assessments must also consider both construction and operational phases. This will be

set out in the gate two guidance. We have also requested specific solution focus on this through action 3 and recommendation 3 in the Appendix to this document.

3.2.5 Water resource benefit

Infrastructure options will be selected as part of regional plans and WRMPs. These plans consider both demand side measures and supply side measures as part of the twin track approach to water resources. The national framework – published by the Environment Agency in 2020 – set out expectations that the industry reduces demand to around 110 litres per person per day and reduces leakage by 50% both by 2050. Even with these reductions in demand the sector is going to need to invest in infrastructure to improve drought resilience, reduce the impact of abstraction on the environment, supply a growing population and adapt to climate impacts.

The solution's water resource benefit calculation was assessed as sufficient for gate one. The water companies will continue to develop the water resource modelling and yield assessments and evidence surrounding them; considering drought, climate change, environmental and demand scenarios. We will provide guidance for further detailed water resource benefit investigations at gate two. We have included recommendation 4 in this document to monitor this. The solution owners have also specified gate two activities to undertake updated water resource modelling, which includes refining calculations of unsupported River Severn resource benefit, and further work specifically on River Severn losses.

In response to GARD's comment that a release from Vyrnwy greater than 180 Ml/d should be considered, the capacities of options considered within the RAPID process were developed by solution owners taking into account feasibility, environmental assessments and water availability under abstraction licence limits, in order to progress delivery of water resource management plans at WRMP19. We expect that any larger capacity options would be identified and assessed through the regional and company planning process at WRMP24 and an update provided on option capacities at gate two.

The 75Ml/d release restrictions to Afon Vyrnwy have been set by the solution owners, STT, based on their investigations to date, and work is being undertaken for Gate two to assess the in-combination impacts on the Afon Vyrnwy of STT releases, reservoir compensation releases and releases for River Severn regulation.

In respect to the Deerhurst environmental constriction, Hands off flow (HoF) conditions are regularly reviewed as part of the Environment Agency's abstraction licensing strategy cycle. The Deerhurst HoF was updated as part of the Severn Corridor Abstraction licence strategy review in February 2020 and is based on best available data and the Environment Agency's

understanding of ecological needs, and hence features as such in STTs investigations. The next update is due 2024 but this is subject to new data sets and technical reviews.

Regarding the solution's resilience risks from nationally coherent droughts, RAPID have also commissioned a national scale modelling project, which investigates the performance of RAPID solutions against national scale droughts, and will report on this ahead of gate two.

3.2.6 Environment

Environmental Impact

STT's environmental assessment was assessed as sufficient for gate one. The water companies will continue to develop the solutions and evidence surrounding them, including environmental impact and potential to meet requirements for biodiversity net gain. We will provide guidance for further work at gate two. It was therefore appropriate for STT to progress to gate two, with requests for more detailed monitoring and environmental assessments to investigate the uncertainty that exists for environmental issues. We have also specified through action 6, a need to further investigate STTs environmental impact on designated sites such as the Severn Estuary.

Invasive Non-Native Species (INNS)

We are requesting, through gate two guidance, that risk of INNS is fully investigated, including utilising the National Appraisal Unit's INNS tool to identify risk and mitigation measures.

3.2.7 Procurement

We will require further detail to be provided on procurement, ownership and operation of the solution at gate two. RAPID will be setting out requirements in this respect in gate two guidance. RAPID is also publishing a consultation document that will include consideration of approach to procurement and commercial structures and has set up a commercial working group looking at the approach to procurement and commercial arrangements for the RAPID solutions.

3.2.8 Gate costs

In our draft decision, we identified two areas where we considered submitted evidence as being insufficient to justify efficient and allowed spend within the gate one programme of works. These were programme management & delivery costs (£400,000), and tripartite

company activity costs (£431,000), totalling £831,000. We recognised the complexity of the solution required a notable intensity of project management and inter-company management. However, the evidence provided in the form of breakdown of spend by activities in the submission, and in the query response (STT005), was not of sufficient detail for us to accept the spend as allowable and efficient. We therefore made the draft decision to disallow the claim for the project management & delivery and tripartite company activity costs, until evidence was provided to justify part, or all, of the claim submitted as relevant and efficient activities for the River Severn to River Thames transfer solution at gate one.

In their joint representation, Severn Trent Water, Thames Water and United Utilities provided further detail of the activities undertaken as part of the tripartite company and project management. Headline activities are provided in table 2 below, alongside the proportion of spend. The representation provides further detail of tasks under each of the headline activities in Table 2 and also provides justification for the spend.

Table 2 STT-provided Tripartite and Project Management Activities

Tripartite Company Activity	Estimated effort split (%)
Mobilisation	10%
Standing meetings / calls	10%
Commercial and programme oversight	10%
Technical oversight	30%
Stakeholder	10%
Cross company / Solution support	10%
In-Company Activities	20%
Project Management Activity	**Estimated effort split (%)**
Mobilisation	10%
Programme Management and programme support activities	35%
Commercial and procurement activities	15%
Technical (Engineering, Water resources, Environmental System)	30%
Other Activities	10%

We agree that the detailed task breakdown of the tripartite company and project management activities in the solution owners' representation are associated with the solution and reflect the volume of work carried out for the project.

Where 'in-company' activities are listed at future gates, it may be necessary to detail how these are differentiated or separated from 'business-as-usual' company activities.

We agree the explanations on the complexity of the project justify the higher proportion of spend on tripartite company and project management activities seen for STT. Our final decision is therefore that the tripartite company and project management spend (totalling £831,000) is efficient and allowable.

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 3 Final decision summary

Recommendation item	River Severn to River Thames transfer
Solution sponsors	Thames Water, Severn Trent Water and United Utilities
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 – see Section 4.2
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 have decided to merge the gate one and gate two allowances. This results in a total allowance of £12.635m 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 £4.014m (of £4.014m claimed). This is the final reconciled cost.

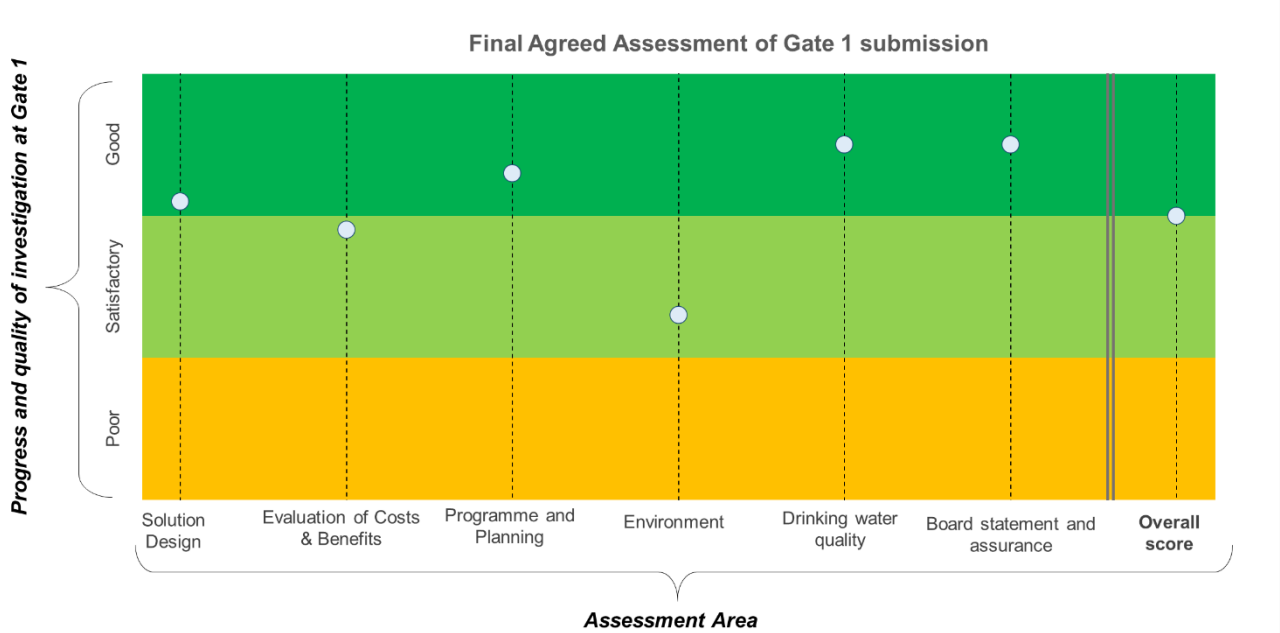
We have therefore allowed the full amount claimed for gate one.

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[5]. We have also assessed the Board assurance provided.

Figure 2 – Submission Assessment



Our overall assessment for the solution submission is that it is satisfactory (falls short of meeting expectations in some areas).

We have decided not to impose a potential delivery incentive penalty. This reflects that progress on this solution falls short of meeting expectations in some areas, but that this is mostly confined to the environment assessment area and evaluation of costs and benefits assessment area, and in our view does not undermine the quality of the submission overall. We consider the shortfalls in the environment assessment area can be best addressed through the use of specific, curated actions and recommendations to direct and focus the work carried out for gate two, see further section 4 and the appendix to this document. We will monitor incorporation of these actions into the solutions forward programme through regular checkpoint meetings.

[5] https://www.ofwat.gov.uk/publication/rapid-strategic-regional-water-resource-solutions-guidance-for-2021/

Further details of our assessment are provided below.

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 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 submission in developing the solution design at gate one has been good. The submission still fell short of expectations on some specific assessment elements, including the alignment with other potentially benefiting or impacted strategic resource solutions in the south east, and a lack of engagement with specific and local stakeholders, including those in Wales.

Key themes for gate two include to further refine the understanding and evidence behind utilisation of the solution, and exploring utilisation opportunities with third parties (eg with River Severn Partnership, as acknowledged in the submission). Incorporating updated utilisation into environmental assessments will aid identification of specific environmental impacts, and also enable refining solution operational costs.

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 evaluating the solutions costs and benefits at gate one has been satisfactory. The submission fell short of expectations in some areas, including the evidence of assessment of costs & benefits, due to a lack of detail in alignment with Welsh legislative requirements, and lack of inclusion of societal and amenity costs and benefits. The submission also fell short of expectations for considering wider resilience benefits of the solution and its two route options, beyond the resilience of the solution. The submission also fell short of providing a full best value assessment that sufficiently discussed and compared both routing options for the solution. Nor did the best value discussion fully consider all the enabling supply solutions for the Severn to Thames Transfer.

Key themes for gate two work should also be to advance modelling of the solution, including updating modelling assumptions behind the unsupported River Severn flows as we have low confidence in the current evidence-base. We acknowledge that the submission highlights additional work to be undertaken in this area for gate two.

4.3.3 Programme and Planning

Our assessment of the programme and planning considered whether Thames Water, Severn Trent Water and United Utilities 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 that the progress and quality of submission regarding the programme and planning, risks and issues and the procurement and planning route strategy for the River Severn to River Thames transfer at gate one has been good. The submission fell short of expectations in some areas, including fully understanding the risks from potential regulatory barriers, particularly arising from the Habitats Regulation Assessment. This risk is also highlighted in the Environment section below.

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 work presented in the gate one submission in this area was satisfactory, however the submission fell short of expectations in some areas. This includes the extent of evidence in environmental assessments to understand environmental impacts and risks, and extent of monitoring plans to address this understanding.

In particular, the gate one submission does not reflect the challenges and risks the solution faces with regard to compliance with the Habitats Regulations, as there is insufficient evidence at this stage to conclude no significant impact on the integrity of the Severn Estuary Special Area of Conservation (SAC) and its linked habitat. In gate two, the solution needs to investigate fully the environmental impacts, risk and potential mitigation measures required. This should include, but not restricted to: the impact on the integrity of the Severn Estuary SAC; the impact on water body status and measures under the Water Environment (Water Framework Directive) Regulation 2017; flow losses; and in combination impact

assessment with other plans and programmes. Additional monitoring on the Severn Estuary, linked habitats and middle Severn and River Thames may also be required. Environmental assessments should also ensure compliance with the Environment (Wales) Act 2016 and Well-being of Future Generations (Wales) Act 2015. Specific actions and recommendations have been provided for this in the appendix to this document, and monitored through regular checkpoint meetings.

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.

The solution sponsors have provided Board statements that indicate:

- their support of submission recommendations for solution / option progression;
- they are satisfied that progress on the solution is commensurate with the solution being construction ready for 2025-30;
- they are 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.

These statements are accompanied by an explanation of the approach to assurance and a description of the evidence and information that the Boards have relied on in giving the statements.

5. Proposed changes to partner arrangements

There are no proposed changes to partner arrangements.

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 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 the River Severn to River Thames transfer, therefore we do not require the solution sponsors 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 Thames Water, Severn Trent Water and United Utilities to complete the activities listed in 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

Actions – to be addressed in gate two submission		
Number	**Section**	**Detail**
1	Solution Design	Ensure Welsh stakeholders and customers are included in solution specific engagement
2	Costs & Benefits	Further work is required on elements of the solution which impact on Wales ecosystem resilience. This will achieve sustainable management of natural resources as well as helping to achieve goals set out in the Well-being of Future Generations (Wales) Act 2015. Any proposal which has implications for Wales must meet the requirements of this Act and the Environment (Wales) Act 2016. This is in addition to the natural capital and biodiversity net gain requirements for England.
3	Costs & Benefits	Present the outcomes of the resilience assessments of the solution in submission documents, with a focus on comparisons between the routing options. Investigate multi sector benefits the solution could provide. The solution also needs to consider the benefits to Wales as required under Welsh legislation.
4	Programme & Planning	Demonstrate full understanding of the risks to the solution from potential regulatory barriers, this includes risks and issues associated with the Habitats Regulations.
5	Environment	Ensure environmental assessments comply with the Environment (Wales) Act 2016 and Well-being of Future Generations (Wales) Act 2015.
6	Environment	Investigate the impact of the solution on the integrity of the Severn Estuary Special Area of Conservation.
7	Environment	Illustrate the relationship between carbon reduction, sector net zero commitments and solution design and delivery choices Show methods used for carbon calculation, considering framework and national policy guidance.
Recommendations		
Number	**Section**	**Detail**
1	Solution Design	Ensure relationships with receiving SROs in the south east are closely managed, and the communication of benefits to each solution are aligned (for example with SESRO).
2	Solution Design	Develop a stakeholder engagement plan, including wider and local stakeholders, once decision on preferred route has been made.

3	Costs & Benefits	Further integrate social and amenity values into a costs & benefits assessment of the solution. Provide specifics on work being undertaken to adhere to Welsh legislation.
4	Costs & Benefits	Further explore uncertainties in Deployable Output modelling following Water Resources South East modelling outputs and River Severn to River Thames transfer model build, including the solutions unsupported flow assumptions. We acknowledge this is being incorporated into gate two activities.
5	Costs & Benefits	Investigate and present potential wider resilience benefits of the solution, beyond the resilience of the solution itself, even if these opportunities are limited by the solution type.

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