

Regulators' Alliance for Progressing  
Infrastructure Development

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# Strategic regional water resource solutions: Standard gate one final decision for Thames to Affinity Transfer



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## 1. Introduction

The purpose of this publication is to set out our final decision in respect of the Thames to Affinity transfer (T2AT) strategic regional water resource solution submitted for the standard gate one assessment by solution sponsors Thames Water and Affinity Water<sup>1</sup>. The solution includes eight options with two different capacity alternatives for each. Further information concerning the background and context of the Thames Water and Affinity Water T2AT can be found in the T2AT publication document on the [Thames Water](#)<sup>2</sup> and [Affinity Water](#) websites<sup>3</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 Thames Water and Affinity Water for the level of engagement, collaboration, and innovation that they have exhibited during this stage in the gated process.

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<sup>1</sup> Referred to in PR19 final determination as “Thames to Affinity transfer.”

<sup>2</sup> [Thames Water - Gate One Submission - T2AT \(thameswater.co.uk\)](#).

<sup>3</sup> [Affinity Water - Gate one submission - T2AT \(affinitywater.uk.engagementhq.com\)](#)

## 2. Solution summary

The T2AT provides a transfer of raw water from existing or proposed new sources available from Thames Water's London Water Resource Zone (WRZ) to Affinity Water's Central Region (WRZ 3 or 4). The transfer could be derived from various new sources of water, either from the Thames upstream of Teddington Lock or from existing treated effluent in the Thames tideway (sharing of resources from the London Reuse SROs in either east or west London).

There are 8 sub-options, each with a 50 Ml/d and 100 Ml/d capacity alternative summarized in Table 1 below, and a schematic included in figure 1 below.

**Table 1. T2AT Sub-options Summary**

Supported by	Option name	Source	Abstraction Option	Conveyance	Treatment Option
<b>New resources in R. Thames</b>	Sunnymeads 1	STT or SESRO	A1. Sunnymeads	Raw water transfer to WTW	T1. Harefield
	Maidenhead	STT or SESRO	A2. Cookham	Raw water transfer to WTW	T1. Harefield
	Sunnymeads 2a	STT or SESRO	A1. Sunnymeads	Raw transfer to Iver; Treated water to Harefield	T2. Iver
	Walton 2b	STT or SESRO	A3. Walton	Raw transfer to Iver; Treated water to Harefield	T2. Iver
	Existing Thames Reservoir (ETR)	SESRO	A4. ETR	Raw transfer to Iver, existing tunnel. Treated water to Harefield	T2. Iver
<b>London Reuse options in East London</b>	Teddington Direct River Abstraction (DRA)	Teddington DRA	A5. Teddington	Raw water transfer to WTW	T1. Harefield
	Mogden Reuse	Mogden reuse	A3. Walton	Raw transfer to Iver; Treated water to Harefield	T2. Iver
<b>London Reuse options in West London</b>	Beckton Reuse	Beckton reuse	A6. River Lee	Raw transfer to WTW	T3. North Mymms

Figure 1. T2AT Schematic



## 3. Summary of representations

### 3.1 Representations received

We have received the following representations relevant to T2AT.

**Table 2. Summary of Representations**

Representation from	Summary of representation
<p><b>Chalk Streams First Coalition (CSF)</b></p>	<p>CSF recommends that T2AT should fully incorporate the CSF proposal for flow recovery and that Ofwat/RAPID should include a specific recommendation for the CSF proposal to be fully investigated at gate two.</p> <p>CSF raised concerns about the low flow recovery estimates produced by T2AT's algorithm and as a result request full transparency in the process of chalk-stream flow recovery assessment and its influence on the deployable output of London's supplies. They request reports, models, and data used by the water companies in this assessment.</p> <p>In addition, they propose:</p> <ul style="list-style-type: none"> <li>• that CSF partners collaborate with the water companies in the flow recovery and London deployable output (DO) benefit assessments;</li> <li>• that CSF's own assessments and modelling are given consideration in the process; and</li> <li>• that consideration be given to accelerating at least parts of the Supply 2040 network to allow the bulk of the chalk groundwater reductions to be operational by 2029/30.</li> </ul>
<p><b>Group Against Reservoir Development (GARD)</b></p>	<p><b>Transparency of cost estimates</b></p> <p>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></p> <p>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</p>

	<p>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> 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>Sources of supply</b> GARD disagrees with the companies' assessment of potential sources for T2AT, noting demand saving schemes as additional sources of supply for the transfer. GARD proposes that the Severn to Thames Transfer (STT) could also be used to support the option in which the transfer to Affinity is direct from an existing London reservoir (the "Existing Thames Reservoir" option) and recommends that Ofwat/RAPID require that this should be properly modelled and assessed. GARD also recommends that Ofwat/RAPID require the unsupported STT to be investigated as a potential source for all of the identified T2AT options for gate two, with deployable output to be assessed using the same modelling approach as all of the other options.</p> <p>GARD expressed concerns about the low flow recovery rates identified in the gate one submission. They cite a risk that T2AT's algorithm will create a 'black box' and hide the flow recovery detail of the transfer and the CSF proposal. They urge RAPID to insist on full and early availability of the companies' flow recovery assessment for this scheme, including access to underlying model output.</p> <p>GARD expressed further concern that the T2AT gate one submission has been written with a strong bias in favour of SESRO as the source of water.</p>
<p><b>Port of London Authority (PLA)</b></p>	<p>The PLA flagged that they responded to the initial draft of the gate one report and have no further comments, but that issues they raised such as the operation of Richmond Lock and Weir and the physical/biological impacts from changes to salinity and temperature, were excluded from the gate one review and are being undertaken in gate two.</p>
<p><b>Affinity and Thames Water</b></p>	<p>The companies confirm that they have no concerns with the actions and recommendations put forth by Ofwat/RAPID and will proceed to gate two intending to resolve each item.</p> <p>They enquire about the possibility of utilising the underspend of their gate one allowance for gate two activities, if required. The final and reconciled gate one costs are £253 less than those included in the gate one submission.</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 CSF proposal and flow recovery estimates

We have added a recommendation to the Appendix for the solution owners to thoroughly consider the CSF proposal for flow recovery at gate two and engage with RAPID and interested stakeholders on how this might best be accomplished. Concerns about models and data availability should be directed to Thames Water and Affinity Water

### 3.2.2 Transparency of 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.

### 3.2.3 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.

### **3.2.4 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.

### **3.2.5 Sources of supply**

Solutions 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 investigation of supply sources was assessed as sufficient for gate one and we have not found any evidence of any bias towards any particular source of supply. The water companies will continue to develop their solutions and evidence surrounding them. Additionally, the gated programme is not designed to be comprehensive – not all large solutions included in WRMP19 preferred or alternative plans are in the RAPID programme. Companies are also funded to investigate and develop evidence to deliver WRMP19 and prepare WRMP24 through inclusion in their business plans.

### **3.2.6 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 3. Final decision summary

Recommendation item	Thames to Affinity transfer
Solution sponsors	Thames Water and Affinity 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 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 £1.87m 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 £0.86m (of £0.86m claimed). These costs reflect final and reconciled costs.

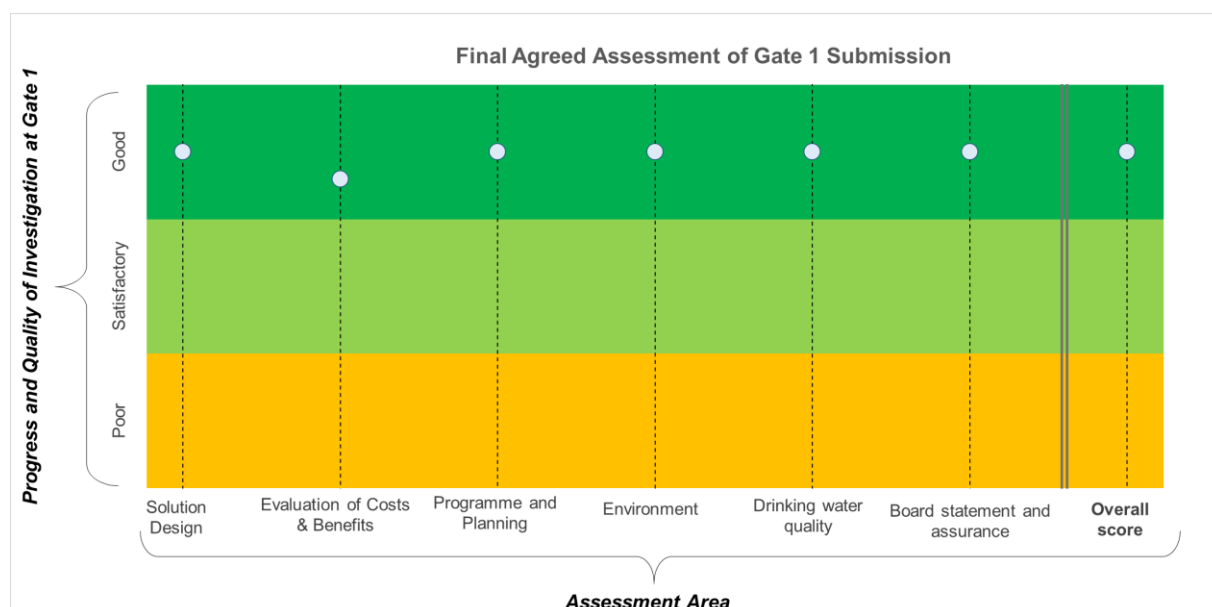
We have made no adjustments to the costs claimed.

## 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.

**Error! Reference source not found.** 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](#). We have also assessed the Board assurance provided.

Figure 2. Submission Assessment



Our overall assessment for the solution submission is that it is good (meets expectations).

### 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 the investigation completed by Thames Water and Affinity Water in developing the solution design at gate one has been good, although we expect to see this expanded upon with more detail in the gate two submission.

### **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 Thames Water and Affinity Water's evaluation of the costs and benefits of the solution for gate one has been good, although we expect to see this expanded upon with more detail in gate two submission, but the submission evidence fell short of expectations in the area of wider resilience benefits. In particular, the submission did not include sufficient detail regarding resilience metric scores associated with the options. The submission referenced the generic Water Resources South East (WRSE) resilience framework methodology but did not describe how the solution performs within the context of this framework, and the submission contained a limited discussion of how the resilience risks will be quantified within regional planning.

Natural capital assessments, and biodiversity net gain assessments need to be reassessed at gate two. Following outputs of regional modelling, wider benefits will need to be refined for the preferred option and the size and yield of the option will need to be confirmed.

### **4.3.3 Programme and Planning**

Our assessment of the programme and planning considered whether Thames Water and Affinity 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 that the progress and quality of the gate one investigation completed by Thames Water and Affinity Water regarding the programme and planning, risks and issues and the procurement and planning route strategy for T2AT has been good. Going into gate two, a full risks register should be shared with the Environment Agency to ensure a work programme is in place to address environmental risks.

### **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 provided by Thames Water and Affinity Water regarding the environmental assessment, potential mitigations, future work programmes and embodied and operational carbon commitments has been good.

In working towards gate two, sponsor companies should work with the Environment Agency and Natural England to ensure potential risks are addressed through a detailed work programme, including a review of the scope of monitoring and refining environmental assessments. Where impacts are identified appropriate mitigation should be investigated and agreed with environmental regulators.

### **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 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 T2AT, 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 and Affinity 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

Actions – to be addressed in gate two submission		
Number	Section	Detail
1	Costs & Benefits	Include resilience metric scores associated with the solution and options and clarify how resilience risks and benefits are captured within the regional best value plan.
2	Costs & Benefits	Ensure climate change impacts are included in the water resource benefits.
3	Costs & Benefits	Assess conjunctive use benefits.
4	Costs & Benefits	Further consider operational issues as the solution could be considered low utilisation.
5	Environment	Ensure and provide evidence that PAS 2080 and a science-based approach have been used to guide the carbon assessment.
6	Solution Design	Complete a detailed assessment of interdependencies and in-combination impacts with other strategic resource solutions and other solutions following the output of regional modelling.
Recommendations		
Number	Section	Detail
1	Solution Design	Ensure lead times are consistently included across all options.
2	Solution Design	Clarify and state where solution responsibilities lie between Thames Water and Affinity Water.
3	Solution Design	Use regional modelling outputs to inform utilisation.
4	Environment	Reference key methodologies and associated relevant frameworks used to calculate operational and embodied carbon and to guide the carbon assessment.
5	Environment	Check all designated site features and potential impact pathways have been identified, undertake in-combination assessments, and reroute any options to avoid SSSIs where this has not already been done.
6	Environment	Thoroughly consider the CSF proposal for flow recovery at gate two and engage with RAPID and interested stakeholders on how this might best be accomplished.



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