Gate 1 queries process

Strategic solution(s)	Thames to Affinity Transfer
Query number	TAT003
Date sent to company	21/07/2021
Response due by	23/07/2021

Query

1) Please clarify how your projected solution cost estimates have changed between total solution costs submitted in WRMP19 or at PR19 and the current Gate 1 submission, where possible providing a breakdown and comparison of the cost estimates. Please explain clearly any changes, added/eliminated cost items or activities, or developments that contributed to the difference.

Solution owner response

WRMP19 solution costs have been provided in various formats, for the purposes of this response we have analysed the option level information available on scheme capex costs for the options proposed for our final WRMP19.

The main difference between the solution cost estimates from WRMP19 and current Gate 1 submission solution costs relate to:

- **Optioneering approach**: WRMP19 proposed a two-phase transfer from the River Thames to Harefield, with two new water treatment works at Iver and Harefield. For the T2AT SRO, we have optimised this approach, with more efficient 50 Ml/d and 100 Ml/d options, rather than a phased approach. This provides significant economies of scale for the same water resource benefit.

- **Strategic Hubs:** Under the T2AT SRO options, the new water is delivered into a strategic 'hub' at Harefield or North Mymms. MISER modelling completed for Gate 1 confirmed this was more strategically valuable and cost-effective to enable large scale integration into the existing distribution system than using the connections at Iver.

- **Optimism Bias:** In WRMP19, costs were presented by Affinity Water without inclusion of optimism bias. This element of uncertainty is now built into the

cost estimates for the T2AT options, consistent with all other option cost estimates submitted to WRSE.

To compare the options, we must first identify the elements in WRMP19 and compare this to the most closely aligned option from the SRO. However, it must be stressed that there is **no direct comparison as the options have been re-conceptualised during the Gate 1 feasibility studies**. The solution in WRMP19 consisted of:

Phase 1
- A 50 Ml/d raw water transfer from Sunnymeads to Iver
- A new WTW at Iver 2 (50 Ml/d capacity)

Phase 2
- A 50 Ml/d raw water transfer from Sunnymeads to Harefield
- A new WTW at Harefield (50 Ml/d capacity) and a new service reservoir at Harefield

Extract from Final WRMP19

> 6.3.7 We propose to develop the transfer and treatment elements of the SESR scheme in two 50Ml/d stages. In the first stage we will develop an abstraction on the River Thames and transfer the new supply to a new treatment works located near our existing Iver works (WRZ4). In the second stage we will extend the transfer through to Harefield and a second 50Ml/d works in that location (WRZ1).

This is most closely aligned to the Sunnymeads 1 (100 Ml/d) option, which consists of a 100 Ml/d raw water transfer from Sunnymeads to Harefield where a new WTW is proposed. However, the options are not exactly aligned. There are other T2AT SRO options that include treatment at Iver, to test the cost effectiveness of this alternative, but Harefield was felt to be a more strategically valuable 'hub' for distribution input at this scale.

The comparison between the capex estimates for these options is shown below:

CAPEX (£'M)	**WRMP19**	**T2AT SRO***
Conveyance, pumping and storage	***[redacted text, commercially confidential]***	***[redacted text, commercially confidential]***
Treatment	***[redacted text, commercially confidential]***	***[redacted text, commercially confidential]***
Base Capex, Sub-Total	***[redacted text, commercially confidential]***	***[redacted text, commercially confidential]***
Optimism Bias	***[redacted text, commercially confidential]***	***[redacted text, commercially confidential]***
TOTAL CAPEX	***[redacted text, commercially confidential]***	***[redacted text, commercially confidential]***

*** Sunnymeads 1 (100 M**l/d) option

The base capex savings are largely delivered through:

- A larger water treatment works at a single site, realising economies of scale.
- Designing out the need for the new service reservoir at ***[redacted text, commercially confidential]***

These cost savings are offset by:

- The inlet and pumping arrangements have all been reviewed and refined by the SRO and new scope costed. This does add additional cost but now more accurately represents the expected requirements for the scheme.
- Land costs being more accurately represented, based upon the indicative locations identified by the SRO.
- Cost opimism bias allowance included.

The optimism bias is consistent with the ACWG methodology and standardises the cost estimate against all other options from across the south-east, to enable consistent comparison in the WRSE Best Value Planning Framework. It ensures that total capex better reflects uncertainty at this early stage in scheme development.

Optimism bias was not added to the scheme for WRMP19 as it was considered that the scheme contained conventional elements that are covered by the Affinity Water unit cost database. However, cross company comparisons and the more detailed review of the optimism bias approach developed with the All Company Working Group mean that, for the Gated submissions, optimism bias was incorporated to reflect the fact that the scheme involves trunk mains and pumping that are larger than Affinity Water's typical schemes, which are routed through complex construction corridors, and the construction of entirely new, complex water treatment works. The application of optimism bias is therefore the main difference between this submission and the WRMP19 submission.

For comparison, the other T2AT options have comparable capex estimates, although each is based upon a completely different scope of works to the WRMP19 option hence cannot be directly compared. The total capex (including optimism bias) for the other options varies between ***[redacted text, commercially confidential]*** (Existing Thames Reservoir, 100 Ml/d, our preferred option at Gate 1) and ***[redacted text, commercially confidential]*** (Walton 2b or Mogden reuse options).

Date of response to RAPID	26/07/21
Strategic solution contact / responsible person	***[redacted text, personal information]*** SRO Programme Manager ***[redacted text, personal information]***

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