Accelerated gate two queries process

Strategic solution(s)	Water Recycling
Query number	SWR004
Date sent to company	14/12/2021
Response due by	16/12/2021

Query

- We note that projected capex costs for the selected option B.2 for Water Recycling are £480m in 17/18 prices, and the maximum capacity is 61mL/day. This implies a cost per ML/day of just over £7.8m. Do you agree with this calculation? If not, please provide an alternative unit cost calculation.
- You refer on p. 287 to the estimation of uncertainty for the project. We assume from the table on p.280 that the uncertainty allowance is £6.8m. Is this correct?
- Has any 3rd party assurance of the costs been undertaken? In particular, what if any other external benchmarking analysis have you undertaken or commissioned? Please provide the assurance and any other such reports as well as details of the benchmarking for Additional Project Costs detailed on page 277 of Annex 2: Water Recycling Technical.
- Page 277 of Annex 2: Water Recycling Technical states that "Construction costs have been collated using the [redacted] platform by the SW CIT to ensure a consistent approach with the supply chain. Infrastructure and tunnelling elements have been priced from first principles utilising current market data in conjunction with [redacted] and [redacted] respectively and linked back to the design information. Process and Desalination (a separate water sourcing solution type considered, refer to documents included as part of SW's Interim Update to RAPID, dated 27 September 2021) plant costs have been derived from a combination of SW and industry cost data and reviewed against market norms." Please provide the current market and industry data as well as market norms referenced, and explain how the presented solution costs measure against these.
- Have you undertaken any analysis to determine when marginal costs start to rise significantly to increase the size of the solution further? In other words, how much more expensive (cheaper) a much larger (smaller) solution would be?

Solution owner response

We have addressed each of the bullet points raised in the above query (in italics), with blue responses beneath each bullet. Please note, the same processes have been used for all options in the Gate 2 submission (to ensure consistency and comparability of different options) so there are aspects of this response which correspond to the answers provided for query HAV003.

- *We note that projected capex costs for the selected option B.2 for Water Recycling are £480m in 17/18 prices, and the maximum capacity is 61mL/day. This implies a cost per ML/day of just over £7.8m. Do you agree with this calculation? If not, please provide an alternative unit cost calculation.*

We confirm that £480m is the correct capex cost for Option B.2.

We note that the calculation includes capex cost only and not totex which does not provide a whole life view of the cost.

We confirm that your calculation is correct but we can't comment on it appropriately unless we know what is being done with it. Please note that this asset will not be producing 61 Ml/d every day as it is a drought asset.

- *You refer on p. 287 to the estimation of uncertainty for the project. We assume from the table on p.280 that the uncertainty allowance is £6.8m. Is this correct?*

Option B.2

  - The estimating uncertainty allowance for B.2. (no CeraMac) is £6.8m
  - The calculation of estimating uncertainty for option B.2 can be reached by deducting the "infra" cost (£68,926,811.98) and the "non infra" cost (£100,265,274.33) from the Net Direct Cost total (£175,959,769.76) which provides an estimating uncertainty allowance of £6,767.683.45.

Option B.5

  - The estimating uncertainty allowance for B.5. (no CeraMac) is £9.9m
  - The calculation of estimating uncertainty for option B.5 can be reached by deducting the "infra" cost (£92,723,773.23) and the "non infra" cost (£105,820,395.97) from the Net Direct Cost total (£208,471,377.66) which provides an estimating uncertainty allowance of £9,927,208.46.

- *Has any 3rd party assurance of the costs been undertaken? In particular, what if any other external benchmarking analysis have you undertaken or commissioned? Please provide the assurance and any other such reports as well as details of the benchmarking for Additional Project Costs detailed on page 277 of Annex 2: Water Recycling Technical.*

No third party benchmarking analysis was commissioned however, internal benchmarking was undertaken by SW and its SME supply chain. Third party assurance of the costs was completed by [redacted] prior to submission with the assurance process being described in Annex 7, Assurance process.

We have included below the detailed scores from [redacted], our external Gate 2 Assurer, for the Cost Modelling and Procurement sections of Annexes 2 and 3 (which supports the areas being queried in SWR004).

New Gate 2 Assurance Statement

Jacobs

Annex		Is the work complete?	Is the evidence sufficient?	Is the work consistent?	Are the risks considered?	Is the document aligned with the RAPID template and Gate 1 determination?
Cost Modelling	Water Recycling	B	A	B	A	B
	Havant Thicket	B	A	B	A	A
Commercial & Procurement	Water Recycling	A	B	B	A	A
	Havant Thicket	A	B	B	A	A

The following Additional Project Costs have been reviewed and updated with the Southern Water project team, and their suitability verbally agreed following review by Contract Manager during the procurement process (note, all frameworks have been competitively tendered):

- Pilot Project Costs
- Planning
- Public Consultation
- Legal

Additional Project Costs for Environment have been reviewed with SW environment team and subject experts [redacted]. The review was not an official benchmarking exercise. Instead it was professional input from review of known environmental costs on specific projects and how they compare to the options proposed, by a knowledgeable subject expert to ensure that costs were an appropriate order of magnitude for the project.

Additional Project Costs for Land purchase have been included with independent cost benchmarking by [redacted].

Additional Project Costs for Power use desktop quotations provided by Scottish and Southern Electricity. An engineering specification was provided to SSE and the costs returned were agreed within the Southern Water electrical engineering team to ensure that adequate budget was available for the safe installation of the required power supplies. These were used as a basis for the Gate 2 submission.

- *Page 277 of Annex 2: Water Recycling Technical states that "Construction costs have been collated using the [redacted] platform by the SW CIT to ensure a consistent approach with the supply chain. Infrastructure and tunnelling elements have been priced from first principles utilising current market data in conjunction with [redacted] and [redacted] respectively and linked back to the design information. Process and Desalination (a separate water sourcing solution type considered, refer to documents included as part of SW's Interim Update to RAPID, dated 27 September 2021) plant costs have been derived from a combination of SW and industry cost data and reviewed against market norms." Please provide the current market and industry data as well as market norms referenced, and explain how the presented solution costs measure against these.*

We are unable to share industry and market data as it is the Intellectual Property of our framework cost estimating consultant ([redacted]).

We are unable to share SW cost data as it would compromise our commercial position in respect of current and future procurement. This is due to the potential for this information to become publicly available (RAPID have made it clear that all queries will be published). We would be happy to discuss this with you.

The costs and costing methodology used for the pipeline elements was tested and refined with estimating expertise in our partners [redacted]. The final costs were agreed collectively. The same approach was adopted for the tunnelling elements with [redacted].

Southern Water engaged the services of [redacted] (tunnelling) and Southern Water's delivery partner [redacted] (infrastructure) to provide assistance in terms of constructability for the engineering solutions currently proposed at Gate 2. While this was not a stand-alone external benchmarking exercise, the benefit of this in terms of cost, was that the tunnelling team at [redacted] and the estimating team at [redacted] were able, as part of the collaborative team, to provide assurance that costs collectively produced, were appropriate for market conditions at the time and the complexities of the solutions.

- *Have you undertaken any analysis to determine when marginal costs start to rise significantly to increase the size of the solution further? In other words, how much more expensive (cheaper) a much larger (smaller) solution would be?*

We have completed some high level sensitivity analysis to understand how costs increase or decrease when different future scenarios of the solution are considered.

Value costing work on the variation of key elements is being undertaken for Gate 3. This work is at an immature stage of development and we propose to share with RAPID at Checkpoint meetings between Gate 2 and 3.

Date of response to RAPID	15/12/21
Strategic solution contact / responsible person	[redacted]