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## Gate 1 queries process

<b>Strategic solution(s)</b>	Severn to Thames Transfer
<b>Query number</b>	STT003
<b>Date sent to company</b>	02/08/2021
<b>Response due by</b>	04/08/2021

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### 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. Where possible, please use data in WRMI tables for a more detailed cost comparison. If costs have not been published in WRMI tables, please use the next best data source available.
  2. Please confirm the amount charged for EA/NE costs included in the line item "Third party costs: EA / NE, regional WRMP, NRW" in Table 14-1 and the amount agreed for these costs prior to the gate 1 submission.
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## Solution owner response

- 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. Where possible, please use data in WRMI tables for a more detailed cost comparison. If costs have not been published in WRMI tables, please use the next best data source available.**

A comparison of the principal cost changes is provided below for the Interconnector options (pipeline and canal). It should be noted, whilst the costs in Section 10 of the report do enable comparison between options, they do not take account of the holistic costs of the scheme, as they exclude the costs of the source SROs. The STT solution costs should therefore not be used for decision making in isolation.

### ***Interconnector: Pipeline Option***

Data was provided at WRMP19 in WRMI tables for the pipeline, but a holistic approach was used with total costs for all sources and the interconnector as well as system upgrades to allow the water to be abstracted, treated and distributed. The AIC figures previously presented also used a different basis of benefit (DO for the whole project) whereas the relevant aspects of the current solutions presented at Gate 1 uses capacity of the relevant sections for the AIC figures presented. As a result, a detailed comparison with the WRMI tables cannot be readily provided. A comparison of the solution costs prepared by Thames Water at WRMP19 for the interconnector is however possible, as follows.

As part of the Gate 1 design development process we advanced the design of the pipeline option, revising and updating both the scope and the risk provisions. This process saw an increase in base-cost and a commensurate reduction in risk provision which offset a significant proportion of the increase.

One of the key differences in pipeline option interconnector costs was due to updates to the assets included in the base costs. Examples included:

- Additional screens, chambers and other items at the intake and discharge locations
- inclusion of easement costs on the pipelines.
- Additional length and deeper shafts for crossings.
- A permanent lagoon at the discharge location to enable commissioning waters to be accommodated should the pipeline be drained when not in use.

These and other additions resulted in higher base costs for the pipeline option. Costed risk registers were reviewed with additional risks added (increased from 24 to 34) and, after

review, some risks were reduced. Optimism bias (OB) adjustments were reviewed, using ACWG methodology, after the costing and risk registers were completed and this decreased the OB percentages due to inclusion of elements in base cost or costed risk.

The overall risk allocation (including OB) for the pipeline option decreased by approximately 16%. After the base cost adjustments, the total pipeline option costs including risk and OB increased by 3-4% (excluding inflation adjustments).

### ***Interconnector: Cotswold Canals Option***

The Cotswold Canals interconnector option was screened out at feasibility stage for WRMP19 and therefore was not included on the WRMP19 Constrained List and the conceptual design was not developed further. For Gate 1 the canal option has been included and re-evaluated. A comparison of Gate 1 costs for the canal option with the costs in the WRMP19 Fine Screening report is provided as follows.

The main differences in the canal option interconnector costs are due to the addition of a number of significant assets that were added to the initial build-up following STT design development at Gate 1. Examples include:

- a pumping station at the WTW.
- The proposed location of the pipeline in the towpath between the river and canal warranted additional ground improvements in relation to sheet piling which increased the base costs.
- Some of the crossings changed to tunnelling due to the site constraints and additional lengths added in order to enable shafts to be constructed in areas with suitable access.
- A number of bridge bypasses were added each of which required an intake and discharge structure as well as a short length of pipe.
- The same assets for the discharge structure at Culham were added to ensure consistency with the pipeline option.
- Pipeline easement costs added.
- (The same costs for the canal and Sapperton tunnel refurbishment were used as were used at WRMP19 screening stage.)

The additions resulted in higher base costs. Costed Risk registers were reviewed with additional risks added (increased from 46 to 58) and, after review, some risks reduced as these moved to the base cost. OB adjustments were reviewed, using ACWG methodology, after the costing and risk registers were completed and this decreased the OB percentages due to inclusion of elements in base cost or costed risk.

The overall risk allocation (including OB) for the canal option increased by 11%. After base cost adjustments, the total canal option costs including risk and OB increased by 19% (excluding inflation adjustments). This change reflects the design development undertaken

at Gate 1 to develop the canal option to a similar level of design as the pipeline option. This will be reviewed further at the start of Gate 2.

It should be noted that WRMP19 costs are presented in 2017 cost base whereas Gate 1 is presented in 2020 cost base. The percentage differences discussed above allow for this change in cost base.

### ***Vyrnwy mitigations***

A high level, preliminary cost estimate for the Vyrnwy Bypass was prepared during WRMP19, but the bypass costs were not explicitly included in the reported cost of the scheme for WRMP19 being covered under risk provisions at that time. For Gate 1 there has been feasibility stage routing and design development of the bypass and development of a cost estimate including risk and OB which is now reported within the scheme costs.

The WRMP costs for Shrewsbury are not readily available from the WRMI data and it has not been possible to provide a comparison for this response.


**2. Please confirm the amount charged for EA/NE costs included in the line item "Third party costs: EA / NE, regional WRMP, NRW" in Table 14-1 and the amount agreed for these costs prior to the gate 1 submission.**

The Gate 1 costs agreed with the NAU (EA/NE/NRW) and confirmed in formal offer letters from each agency are as follows:-

Cost element	Cost	Ref	
Environment Agency	[REDACTED]	EA offer letter , dated 19 <sup>th</sup> November 2020	
Natural England		NE quotation UDS8601, dated 16 <sup>th</sup> December 2020	
Natural Resources Wales		Allowance for EA/NRW/NE of [REDACTED] made in absence of NRW estimate for Gate 1 reporting.	
Support with WRSE October submission			
ACWG costs – cost consistency, raw and treated water quality methodologies			
Regional WRMP cost		Zero	
Allocation of companies' Capital Overhead			
<b>Total (20/21 and 21/22 price base)</b>		<b>£374k</b>	
<b>Total (17/18 price base)</b>		<b>£356k</b>	
<p>* NRW costs were not fully included in the Gate 1 estimate presented in Section 14. NRW costs have only been agreed with NRW in July 2021 as [REDACTED].</p> <p>** Company overhead of [REDACTED] has been charged against the Gate 1 spend with the overhead allocated in proportion to the workstream costs.</p>			

Please note the above costs are based on forecast estimates from the agencies, with actual costs still to be advised and invoiced.

The final account for Severn to Thames Transfer SRO for Gate 1 costs is awaiting invoices from the agencies and once received, a final cost report will be prepared in September 2021.

<b>Date of response to RAPID</b>	4 <sup>th</sup> August 2021
<b>Strategic solution contact / responsible person</b>	 askSTT@jacobs.com