Gate two query process

Strategic solution(s)	London Water Recycling SRO
Query number	LOR007
Date sent to company	15/12/2022
Response due by	19/12/2022

Query

1. Please indicate where in your submission there is evidence that you have considered utilisation rates for Dry Year Annual Average, for events such as: 1:500 year drought events; peak demand; emergency response; in addition to standby or normal year operation.
2. Please indicate where in your submission there is evidence that wider resilience benefits have been assessed.

Solution owner response

This response has been written in line with the requirements of the RAPID Gate 2 Guidance and to comply with the regulatory process pursuant to Thames Water's statutory duties. The information presented relates to material or data which is still in the course of completion. Should the solution presented in the Gate 2 documents be taken forward, Thames Water will be subject to the statutory duties pursuant to the necessary consenting process, including environmental assessment and consultation as required. This response should be read with those duties in mind.

Please indicate where in your submission there is evidence that you have considered utilisation rates for Dry Year Annual Average, for events such as: 1:500 year drought events; peak demand; emergency response; in addition to standby or normal year operation.

Our Gate 2 report paragraphs 4.1 to 4.7 and Figures 4-1, 4-2 and Table 4-1 outlines the assessment and findings on projected utilisation and resource benefit. This includes DYAA, DYCP, and outcome against 1:2, 1:200 and 1:500 drought scenarios. Our deployable outputs are the same for DYAA and DYCP (*Gate 2 report Table 4-1*).

Emergency response and peak demand would relate in this case to being able to ramp up the scheme from hot standby mode at minimum/ sweetening flow to full (100%) flow within a period of between 1 day and 2 weeks. (*see Annex A1 to A4, Section 2.2.5 of each scheme concept design report*).

With regards projected or anticipated utilisation rates the London WRZ has a list of supply-side measures in which several strategic drought schemes augment the water resources available to the WRZ. The strategic drought schemes are labelled "Strategic Schemes in Use" and it is assumed that water recycling schemes would become a "Strategic Scheme in Use", with the same trigger mechanisms in place to bring it into operation in times of drought.

At Gate 2, water resources models have been used to identify representative periods of "Strategic Schemes in Use" to represent SRO operation. The WRSE Group's Pywr water resources model has been used, specifically the north area model. The WRSE WRMP24 GR6J stochastic flow series has been used for the current water resources assets, with a 1:200 demand and with drought permits off. The GR6J stochastic flow series comprises 400 stochastic representations of 48 calendar years, which total a set of 19,200 years of river flows and water resources asset utilisation. We conclude a water recycling option would be utilised every 2 years and would typically be in the months August to November, peaking at 37% of days in September. We have set this out in paragraphs 4.1 to 4.4 and Figures 4-1 and 4.2 of the Gate 2 report.

Thames Water have also provided supplementary evidence within the draft WRMP24 submission providing an option utilisation for "TMS-dWRMP24-004-Response". In the option utilisation workbook, they have provided quantitative utilisation figures from the four scenarios which are considered within the WRSE investment modelling. These are:

- Normal Year supply & Normal Year demand – weighting 50%
- 1 in 500-year annual average supply (noting that 1 in 500-year is the figure after 2040 – 1 in 100 and 1 in 200 up to this point respectively) and DYAA demand – weighting 9.2%
- 1 in 500-year critical period - weighting 0.8%
- 1 in 100-year supply and DYAA demand - weighting 40%

They have used these weighting figures to provide a weighted average annual utilisation figure, as requested. They have provided data for every year of the planning period, rather than for 5-year intervals, as this provides Ofwat with more granular information.

Please indicate where in your submission there is evidence that wider resilience benefits have been assessed.

Wider resilience benefits have been assessed through the WRSE regional modelling where for all London Water Recycling schemes, multiple sizes and phases exist, these scalability costs are included and considered in the WRSE modelling which has selected the optimised combination of options, considering these scalability costs and wider resilience *benefit, see https://wrse.uk.engagementhq.com/our-draft-best-value-regional-plan*

Gate 2 report paragraphs 4.8 to 4.11 outline how we have assessed resilience of the options.

We have considered the resilience of water available for use (*see Annex A1 to A4 section 2.2.2*) to ensure in worst-case droughts the schemes would have a supply of final effluent available. We have also considered resilience in operation (*see Annex A1 to A4 section 2.2.5*) to ensure the schemes would be online and available to supply within the required timescales. Also considered is resilience to operation from risk of flooding or coastal erosion (see *Gate 2 report paragraphs 4.9 to 4.11*).

Date of response to RAPID	19/12/2022
Strategic solution contact / responsible person	[redacted]