ANNEX E6

Gate 1 Final Decision - Actions and Recommendations

This document has been written in line with the requirements of the RAPID gate two guidance and to comply with the regulatory process pursuant to Severn Trent Water's and Affinity 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 this document be taken forward, Severn Trent Water and Affinity Water will be subject to the statutory duties pursuant to the necessary consenting process, including environmental assessment and consultation as required. This document should be read with those duties in mind.

Grand Union Canal Transfer SRO
Affinity Water, Severn Trent Water, Canal & River Trust

Annex E6: Gate One Decision - Actions and Recommendations

We have addressed the regulators' actions and recommendations given on our gate one paper, as shown below.

Table A 1: Response to Regulator Actions

<table>
<tr><th>Nr</th><th>Section</th><th>Actions</th><th>Where is it addressed?</th><th>How is it addressed?</th></tr>
<tr><td>1</td><td>Solution design</td><td>Ensure a percentage utilisation is determined, including uncertainty and sensitivity. Provide a detailed explanation of the methodology for defining utilisation from the regional modelling. Operational utilisation should be reassessed and refined following outputs from regional modelling.</td><td>• Gate two submission – 4. Water Resource Assessment > Utilisation.</td><td>Two utilisation scenarios have been modelled for GUC SRO, as shown in the table below. The first is for expected demand and the second for a significant drought period:
<table>
<tr><th rowspan="2">Period</th><th colspan="2">Utilisation (%)</th></tr>
<tr><th>Normal dry year</th><th>Drought year (> 1 in 50 year)</th></tr>
<tr><td>October - April</td><td>25</td><td>25</td></tr>
<tr><td>May</td><td>55</td><td>65</td></tr>
<tr><td>June - August</td><td>80</td><td>100</td></tr>
<tr><td>September</td><td>55</td><td>65</td></tr>
</table>
Modelling has shown that during drought scenarios there is not expected to be any impact on scheme operation.</td></tr>
<tr><td>2</td><td>Environment</td><td>Provide clarity regarding the framework/s used to determine carbon costs and emissions.</td><td>• Gate two submission – 6. Environmental Assessment > Carbon.
• Annex A1 – Engineering CDR.</td><td>We have followed the ACWG task-and-finish group to support the carbon ambition. The value of carbon has been adopted from the time series issued by the Business, Energy and Industrial Strategy (BEIS, 2020-21), monetised carbon has been discounted using HM Green Book's standard rates. Our current operational carbon reduction opportunities are linked to the UK Water Net Zero Routemap. The carbon estimates that have been calculated cover the BS EN 15978 Life Cycles A1 through to B5, accounting for carbon from "cradle" to "end of life" and typically would capture 70-80% of the scheme's whole life carbon. The scheme design looks to reduce the production of carbon and demand on other resources. It will consider high-efficiency pumps, and low-energy/low-carbon water treatment processes. Advantage will be taken, where there is potential, for energy recovery from canal and pumped water transfers.</td></tr>
</table>

Nr	Section	Actions	Where is it addressed?	How is it addressed?
3	Environment	Investigate INNS risks further and the efficiency of proposed treatments / mitigation measures.	• Gate two submission – 6. Environmental Assessment > Habitats Regulations Assessment (HRA). • Annex B3.2.4 – INNS Assessment. • Further field surveys in gate three to capture the full range of INNS present along the transfer route and within hydraulically connected waterbodies.	• The proposed transfers will not introduce new hydrological connections between previously isolated catchments. • The proposed transfer route and hydrologically connected waterbodies already host a range of aquatic INNS, including High Impact species. • Although the addition of treated water from a WwTW will not introduce new INNS to the canal network, the resulting increase in flows may facilitate the downstream spread of INNS already present in the receiving waterbody. • It is critical that the potential risk associated with increased flows through connections such as waste weirs is properly mitigated. • The proposed pipeline section of the scheme presents a lower risk than the open canal section. • Creation and operation of new assets is unlikely to create a new pathway for INNS introduction. Biosecurity measures should be considered to prevent additional INNS introduction. • The EA risk assessment tool for INNS categorises the canal section of the scheme to have a medium risk score (without mitigation). All other scheme components have a low risk score.

Table A 2: Response to Regulator recommendations

Nr	Section	Recommendations	Where is it addressed?	How is it addressed?
1	Solution design	Include potential benefits and issues associated with interactions between the proposed Grand Union Canal route and the Oxford canal scheme.	• Gate two submission – 4. Water Resource Assessment > Water Resource Benefit.	This relatively small scheme is being investigated by Thames Water and the Trust. The scheme may provide approximately 11Ml/d from the Midlands to Thames Water region via the Oxford Canal. The section of the Oxford Canal from Hawkesbury Junction (near Coventry) to Braunston Junction (approx. 32km) will also be utilised by the GUC SRO. A separate, independent water source will supply the Oxford Canal transfer scheme. This additional flow, if operated at the same time as the GUC at full capacity, will result in a small increase in canal velocity and will require bank raising in the upper reaches of some canal pounds. In addition, pumping stations to transfer flows around uphill locks and gravity bypass arrangement to downhill locks will require additional capacity.
2	Evaluation of costs and benefits	Calculate all open water losses. Ensure all possible constraints on DO are considered such as open water quality such as algal growth in warm weather and hand off flow (HoF) considerations.	• Gate two submission – 4. Water Resource Assessment > Water Resource Benefit. •	• The scheme has been sized 115% of the intended DO to account for the lack of large-scale storage within AfW supply network, and for process losses at the water treatment works. • Open water losses are not expected to noticeably increase as a result of the scheme, and are therefore accounted for in the current day-to-day water supply sources to the canal, operated by the Trust. • Algal growth can cause high levels of turbidity, which puts pressure on the treatment process. It can be treated through oxidation, coagulation, Ultrafiltration UF membrane, Granulated Activated Carbon (GAC)/Biological Activated Carbon (BAC). • HoF at North Muskham is being dealt with under Minworth SRO. Options under consideration include the provision of additional storage, as well as a review of the HoF setting.
3	Evaluation of costs and benefits	Include which option is considered best value (rather than just least cost) for customers and the environment and the criteria and method used for best value.	• Gate two submission – 8. Solution Costs and Benefits > Best Value Assessment and Solution Benefits. • Annex A1 – Engineering CDR. • Annex A1.1 – Abstraction Site Selection. • Annex A1.2 – Transfer Route Selection.	The comparative assessment of options has been qualitative, and has considered a breadth of factors during construction and/or operation to allow differentiation between options. These factors are summarised below: • Engineering and design: Potential to minimise material uses, hydraulic efficiency, construction risks and constructability issues, relative resilience to climate change, and the ability to accommodate mitigation measures. • Environmental impact: Relative potential risk to sites with environmental and/or heritage designations, relative embedded and operational carbon for each alternative, and flood risk.

Nr	Section	Recommendations	Where is it addressed?	How is it addressed?
				• Social impact: Impact and disruption to local communities, impacts on users of the canal network, and impacts on non-motorised users such as walkers, cyclists and equestrians. • Cost: A comparison between the relative estimated costs for the alternative options. • Programme: A comparison between how each of the alternative option might impact on the programme, considering their relative ease of construction • Value: An initial review of opportunities to provide potential wider environmental and social benefits, considering how opportunities could align with national and regional policies and strategies.