Grand Union Canal Transfer

Strategic regional water resource solutions: detailed feasibility and concept design

Gate 3 Submission for Grand Union Canal SRO

May 2025
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This document has been written in line with the requirements of the RAPID gate three guidance and to comply with the regulatory process pursuant to Severn Trent's and Affinity Water's statutory duties. The information presented relates to material and data which is still in the course of completion, is indicative, and may change as the scheme develops. Should the scheme progress to the next stages, Severn Trent and Affinity Water will be subject to the statutory duties pursuant to the necessary consenting process, including environmental assessment and consultation. This document should be read with those duties in mind.

Quality information

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Prepared for: RAPID

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GUC SRO Team

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Glossary

Abbreviation	Explanation	Abbreviation	Explanation
ACWG	All Company Working Group	EA	Environment Agency
A/HMWB	Artificial and Heavily Modified Water Bodies	EAR	Environmental Appraisal Report
AWTP	Advanced Water Treatment Plant	ECI	Early Contractor Involvement
ADO	Average Deployable Output	EIA	Environmental Impact Assessment
AfW	Affinity Water	EQS	Environmental Quality Standards
AIC	Average Incremental Costs	EQSD	Environmental Quality Standards Directive
BAU	Business As Usual	FD	Final Determination
BNG	Biodiversity Net Gain	FRA	Flood Risk Assessment
BSA	Bulk Supply Agreement	GAC	Granular Activated Carbon
CAP	Competitively Appointed Provider	GHG	Greenhouse Gas
CAPEX	Capital Expenditure	GLNP	Gloucestershire Local Nature Partnership
CCG	Customer Challenge Group	GUC	Grand Union Canal
CCW	Consumer Council for Water	GUCT	Grand Union Canal Transfer scheme
CDR	Conceptual Design Report	GUC TREAT 115	The full treatment process to treat 115Ml/d (including Phosphorous removal)
CMS	Carbon Management System	GUC TREAT 115 ALT	Phosphorous removal treatment process (only) to treat 115Ml/d
CPNI	Centre for the Protection of National Infrastructure	GUC TRANSFER 115	The Minworth to Atherstone pipeline to convey 115Ml/d
CPO	Compulsory Purchase Order	GWT	Gloucestershire Wildlife Trust
CPRE	Campaign to Protect Rural England	HAZOP	Hazard and Operability Study
CTC	Cotswold Canals Trust	HBCDD	Hexabromocyclododecane
D&B	Design & Build	HE	Historic England
DBF	Design, Build & Finance	HoF	Hands-off Flow
DBFOM	Design, Build, Finance, Operate & Maintain	HMA	Hybrid Media Adsorption
DBOM	Design, Build, Operate & Maintain	HRA	Habitats Regulations Assessment
DCO	Development Consent Order	IDR	Independent Design Review
DO	Deployable Output	INNS	Invasive Non-Native Species
DPC	Direct Procurement for Customers	IROPI	Imperative Reasons of Overriding Public Interest
DWI	Drinking Water Inspectorate	ITT	Invitation to Tender
DWPA	Drinking Water Protected Area	LCT	Landscape Character Types
DWSP	Drinking Water Safety Plan	LCWIP	Local Cycling and Walking Infrastructure Plan
ES	Environmental Statement	LIDAR	Light Detection and Ranging
ESOS	Energy Saving Opportunity Scheme	LOD	Limits of Detection

Abbreviation	Explanation	Abbreviation	Explanation
MCC	Motor Control Centres	SCADA	Supervisory Control and Data Acquisition
M&E	Mechanical & Engineering	SCL	Special Category Land
Ml/d	Megalitres per day	SEA	Strategic Environmental Assessment
MRS	Market Research Society	SECR	Streamlined Energy and Carbon Reporting
NAU	National Appraisal Unit	SANG	Suitable Alternative Natural Greenspace
NCSC	National Cyber Security Centre	SEMD	Security and Emergency Measures Directive
NE	Natural England	SIPR	Specified Infrastructure Projects Regulations
NEC4	Institution of Civil Engineers New Engineering Contract 4	SLR	South Lincolnshire Reservoir
NFU	National Farmers' Union	SoCC	Statement of Community Consultation
NGO	Non-Governmental Organisation	SoS	Secretary of State
NIC	National Infrastructure Commission	SPA	Special Protection Area
NPS	National Policy Statement	SPP	Special Parliamentary Procedure
NPV	Net Present Value	SRO	Strategic Resource Option
NSIP	Nationally Significant Infrastructure Project	SSSI	Site of Special Scientific Interest
O&M	Operations & Maintenance	ST	Severn Trent
OB	Optimism Bias	STS	Severn Trent Sources
OPEX	Operating Expenditure	STT	Severn to Thames Transfer
PA2008	Planning Act 2008	SuDS	Sustainable Drainage Systems
PAS	Publicly Available Specification	SWQRA	Strategic Water Quality Risk Assessment
PEIR	Preliminary Environmental Information Report	tCO2e	tonnes CO_2 equivalent
PCV	Prescribed Concentration Values	TCPA	Town and Country Planning Act 1990
PFOA	Perfluorooctanoic Acid	the Trust	The Canal & River Trust
PFOS	Perfluorooctane Sulfonate	WBS	Work Breakdown Structure
PNEC	Predicted No-Effect Concentration	WFD	Water Framework Directive
PPA	Planning Performance Agreement	WIA	Water Industry Act
PQQ	Pre-Qualification Questionnaire	WLC	Whole Life Carbon
PR24	2024 Price Review	WRINPS	Water Resource Infrastructure National Policy Statement
PRoW	Public Rights of Way	WRMP	Water Resources Management Plan
RAPID	Regulators' Alliance for Progressing Infrastructure Development	WRSE	Water Resources South East
RO	Reverse Osmosis	WRW	Water Resources West
RSPB	Royal Society for the Protection of Birds	WRZ	Water Resource Zone
s.35	Section 35 of the Planning Act 2008	WTW	Water Treatment Works
SAC	Special Area of Conservation	WwRC	Wastewater Recycling Centre

1. Executive summary

1.1 Opening statement

1.1.1 The Grand Union Canal (GUC) Strategic Resource Option (SRO) delivers strategic and regional collaboration, providing a viable solution that transfers surplus water from Severn Trent's (ST) supply area to areas of water deficit in Affinity Water's (AfW) supply area. An overview of the SRO is given in Table 1.1.

Table 1.1. GUC SRO overview

Item	Details
Scheme type	Highly treated recycled water and canal transfer
Key assets	Pipelines, bypass structures, pumps, treatment works, raw water storage and canal bank raising
1 in 500-year Deployable Output (DO)	100Ml/d
Requirements met by the scheme	Statutory requirements as per WRMP to provide 100Ml/d DO for Affinity Water customers
Plans in which the scheme features	WRSE Regional Plan 2024 Affinity Water WRMP24 and PR24
Date by when the scheme is required	Affinity Water WRMP24 requirement for Summer 2032
Year the scheme can be first operated	2032 at 50Ml/d and then from 2033 for the 100Ml/d DO (WRMP24)
Max utilisation average incremental costs (AIC) (with sensitivity test figures)	Revised AIC not generated for gate 3; sensitivity undertaken in previous iterations of WRSE to support gate 2
Carbon impact	Whole-life carbon = 1,394,755 (tCO_2e)
Proposed gate 4 submission date	Q4 2026
Key project risks	Detailed in Chapter 6

1.1.2 The Regulators' Alliance for Progressing Infrastructure Development (RAPID) endorsement through the gated process has enabled this SRO to develop at pace, making significant progress since investigations began in April 2020. Through collaborative working, the SRO partners (ST, AfW and the Trust) are currently aligned on commercial heads of terms and key principles, but will require further work through gate 4 and beyond.

1.1.3 The Water Resources South East (WRSE) Regional Plan[1] has selected the GUC SRO as a pivotal component of the regional solution to meet the region's deployable output (DO) requirements of up to 100Ml/d from 2033. The SRO partners, supported by RAPID, are committed to achieving delivery within this ambitious timeframe.

1.1.4 In accordance with the WRSE Regional Plan and with the final AfW Water Resources Management Plan 2024 (WRMP24)[2], a scheme deployable output (DO) of 100Ml/d is required from the GUC SRO by Summer 2032.

[1] WRSE Regional Plan 2024
[2] AfW WRMP24

1.1.5 Within the current Development Consent Order (DCO) delivery route, a section 35 (s.35) direction has been given by the Department for Environment, Food and Rural Affairs (Defra). Minworth SRO will progress as associated development to the GUC SRO, which is the principal development. The Minworth SRO and the GUC SRO are reported separately to RAPID through their own gate 3 submissions. The current DCO submission date is Q4 2026.

1.1.6 GUC SRO can be construction ready by Q1 2029, and provide water into supply in 2032.

1.1.7 Care has been taken to ensure efficient and relevant spend on agreed activities to advance this project.

1.1.8 RAPID did not issue any gate 2 priority actions to GUC SRO. The SRO partners do not foresee any significant obstacles, and recommend that GUC SRO proceeds to gate 4.

1.2 Key facts

1.2.1 The GUC SRO is entirely dependent upon the Minworth SRO, which has its own gate 3 submission. The Minworth SRO involves additional treatment, a pipeline and a break pressure tank. The GUC SRO begins at a discharge structure on the Coventry Canal near Atherstone, where water is received from the Minworth to Atherton pipeline.

1.2.2 Utilising Minworth SRO as a source for the GUC SRO delivers increased drought resilience when compared to other supply options. This is because Minworth Wastewater Recycling Centre (WwRC) is producing recycled water under all weather conditions. This water currently discharges to the River Tame, so in the event of a drought reducing river flow, it may be the case that the project experiences a restriction to the water available for the GUC. This risk is being mitigated through the inclusion of storage.

1.2.3 The SRO also provides an alternative major surface water supply to AfW in the event of an incident affecting business-as-usual (BAU) surface water supplies from the River Thames. This enhances operational resilience, in addition to the drought resilience benefit outlined above.

1.2.4 The GUC SRO utilises the existing canal network, and therefore involves lower CAPEX and less disruption through construction in comparison to alternative SROs, as well as enhancements to the resilience of the canal for the benefit of its users. These are all wider benefits on top of the volumetric benefit for AfW's customers.

1.2.5 The scope of the GUC SRO (detailed in Section 2) involves a discharge structure, several gravity and pumped bypasses, bank raising, enhanced waste weirs, new pipelines and a revised operational regime for existing reservoirs (including new pumps), a new abstraction structure, a new raw water storage facility, a new water treatment works (WTW) and a new pipeline to an existing underground reservoir near Luton, owned and operated by AfW. The expansion of this existing reservoir and onward transfer in AfW's network is not part of the scope of this SRO, and is being considered separately by AfW as part of its internal plans for network enhancement.

1.2.6 A significant change from gate 2 is that the pumping station and c17km pipeline linking Minworth AWTP to the Coventry Canal at Atherstone are now included in the Minworth SRO, as agreed with RAPID early in gate 3. This element of the project was covered under the GUC SRO at gate 2. Specific detail may be found within the relevant sections of the Minworth SRO gate 3 submission.

1.2.7 GUC SRO did not receive any priority actions to address early in gate 3, confirmed via published letter from RAPID[3].

1.3 Conclusions

1.3.1 GUC SRO is on track for construction readiness within AMP8, as mandated by the PR19 FD and accepted in the PR24 FD. The GUC SRO has been selected by the WRSE Regional Plan to support the DO requirements of the region by 2032, and selected in the AfW WRMP24 as a preferred supply solution.

1.3.2 A key benefit of the GUC SRO is its utilisation of the existing canal network, which involves lower CAPEX and less disruption through construction in comparison to other SROs, as well as providing enhancements to the resilience of the canal for the benefit of its users.

1.3.3 Through gate 3, no showstoppers or issues that threaten the validity of the SRO have been discovered. The project has several important upcoming decision points relating to optionality that are being managed through a process that will be made available to support the statutory consultation. This is not considered a threat to the validity of the SRO. The SRO partners therefore recommend that GUC SRO proceeds to gate 4.

2. Solution design and preferred solution option

2.1 Background and objectives

2.1.1 The National Framework provides a strategic direction for long-term water resource planning, built on a shared vision to leave the environment in a better state than we found it, improve the nation's resilience to drought, minimise interruptions to water supplies for all users, and support growth while underpinning a thriving economy. It requires a step change in strategic and regional collaboration, to ensure the needs of all water users are brought together to better manage and share resources.

2.1.2 The GUC SRO is delivered through collaboration between AfW, ST and the Canal & River Trust (the Trust). The scheme is creating a partnership legacy for future projects by strengthening relationships and sharing knowledge between partners, leading to increasing expertise around water quality, environmental and ecological data.

2.1.3 The scheme uses the Trust's existing infrastructure and therefore minimises construction work, disruption, new materials, and carbon emissions. In addition, it delivers increased water supply drought resilience when compared to other supply options, by utilising recycled water from Minworth Wastewater Recycling Centre (WwRC), which is being produced under all weather conditions.

2.1.4 AfW is focusing on reducing the amount of water taken from sensitive chalk groundwater sources by implementing alternative water sources to meet future water demand in its central area. In support of these steps, the SRO partners are collaborating to secure the additional supplies that AfW's central area will need in the future. The scheme offers a

[3] RAPID Draft Decision

strategic infrastructure solution to efficiently transport water between regions, ensuring it reaches the areas where it is most needed.

2.1.5 In the AfW WRMP24, the preferred water resource strategy includes the development of the GUC SRO, to deliver a DO of up to 100Ml/d from 2033.

2.1.6 The revised draft WRSE Regional Plan has selected the GUC SRO to deliver 100Ml/d DO, to provide additional resilience to AfW to meet existing Water Industry National Environment Programme (WINEP) commitments.

2.1.7 The SRO also provides an alternative major surface water supply to AfW in the event of an incident affecting BAU surface water supplies from the River Thames. This enhances operational resilience, in addition to the drought resilience benefit outlined above.

2.1.8 The timeline for the development of the GUC SRO can enable a new reverse transfer between AfW and Anglian Water, temporarily eliminating the need for the current supply to AfW from Grafham Reservoir, which can then be used to help to support Cambridge Water until it resolves its planned need for additional supply.

2.2 Project overview

2.2.1 The RAPID gated process has enabled this SRO to develop at pace, making significant progress since investigations began in April 2020.

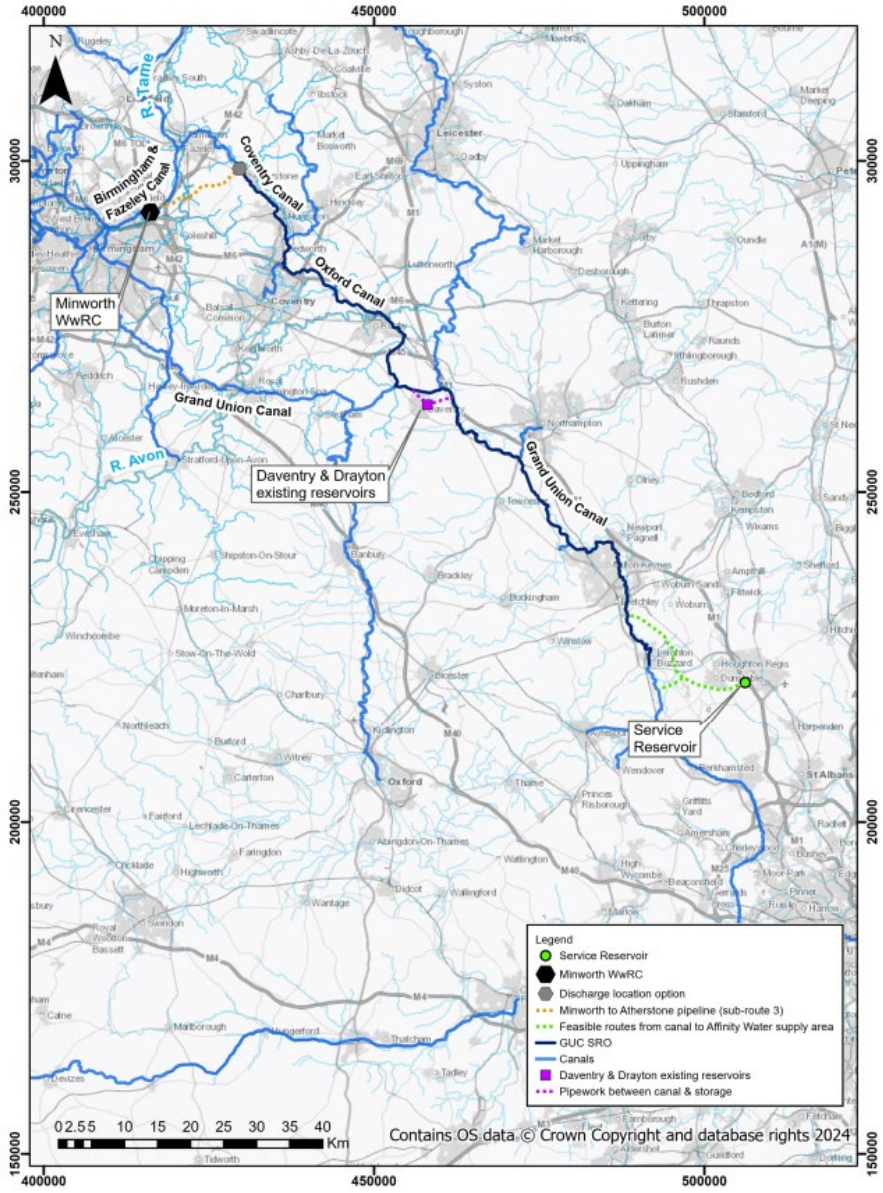
2.2.2 Water from Minworth WwRC is currently discharged into the River Tame. A proportion of the water will be treated at a new Advanced Water Treatment Plant (AWTP) at the Minworth WwRC site to ensure the water quality meets the environmental requirements for discharge into the existing canal network, prior to being transported approximately 131km via the Coventry, Oxford and Grand Union canals.

2.2.3 Currently, the most significant changes to flow rate and velocity in the GUC are when rainfall causes large inflows of water. Canal water levels rise locally, and excess water flows over the nearest waste weirs. The GUC SRO is intended to operate with low rates of change of state to avoid adversely impacting canal users and wildlife.

2.2.4 To manage flow velocities and level changes within the canal system resulting from the increased volume of water being transferred, a range of canal upgrade works will be required. Water moved along the GUC will be abstracted, stored and transferred to a new WTW in the north Buckinghamshire / south Bedfordshire area. Following treatment, the clean drinking water will then be transferred through a new pipeline into AfW's supply for customers.

2.2.5 The layout of the GUC SRO is shown in Figure 2.1.

Figure 2.1. GUC SRO layout



2.2.6 The WRSE Regional Plan has selected the GUC SRO as a key part of the regional solution to meet the DO requirements of the region by 2032. DO is a measure of the annual average level of demand increase that can be met by the scheme. The GUC SRO has been selected as a solution that not only delivers a secure and wholesome supply of water to customers, but also delivers upon the environmental and social benefit metrics used within WRSE's best value modelling. The project also increases the resilience of the WRSE region's water systems and is deliverable at a cost that is acceptable to customers.

2.2.7 The scheme has been sized and costed to enable a transfer capacity of 115Ml/d in order to provide a DO benefit of 100Ml/d, as required by the statutory WRMP24. AfW customers use 12% more water during a hot summer than the average level for the year, in addition, a 3% allowance has been included as an estimate of process losses at the WTW.

2.3 Key changes since gate 2

2.3.1 At RAPID gate 2 (November 2022), the shortlisted WTW sites included in the RAPID gate 1 submission were considered, alongside a further site identified at Leighton Buzzard. An

abstraction location to the north of the Chilterns, near Leighton Buzzard, was included in response to review by the Environment Agency (EA) and in consideration of the risk to changes in flow regime in the chalk streams that interact with the canal network south of the Tring summit. The example site near Leighton Buzzard was used to provide an indicative scheme design, including transferring water to an underground reservoir near Luton. This option was proposed at RAPID gate 2, as it would abstract from the GUC at a point which is upstream and topographically lower than Tring summit, therefore avoiding interaction with the chalk streams south of Tring.

2.3.2 A review of the RAPID gate 1 and 2 site assessment work was undertaken within gate 3 as part of the optioneering exercise to ensure the options have been subject to consistent engineering, environmental, planning and land assessments. This review included the example site near Leighton Buzzard (Site 10) used for RAPID gate 2. Locational advantages for this site were noted; however, several planning designations and constraints were also identified. On the basis of these constraints, it was determined that further site options should be considered and evaluated within the RAPID gate 3 optioneering process.

2.3.3 Further details of this site evaluation exercise are available in Annex C1.3 (Planning and Consents Strategy Report), and the Site and Route Evaluation Report[4] published at non-statutory consultation, including site selection criteria, assessment area and key project aims. In total, 23 sites were identified within the search area and subsequently assessed. Following detailed appraisal, three sites out of the 23 sites taken forward to non-statutory consultation (11 September to 25 October 2024), were identified as having greater potential for development. The project team will review the outcomes from the non-statutory consultation, and additional surveys and assessments, prior to confirming its selection of a preferred option(s) for the future progression of the project.

2.3.4 A final change from gate 2 is that the pumping station and c17km pipeline linking Minworth AWTP to the Coventry Canal at Atherstone is now included in the Minworth SRO submission, as agreed with RAPID early in gate 3. This element of the project was covered under the GUC SRO at gate 2.

2.4 Solution description

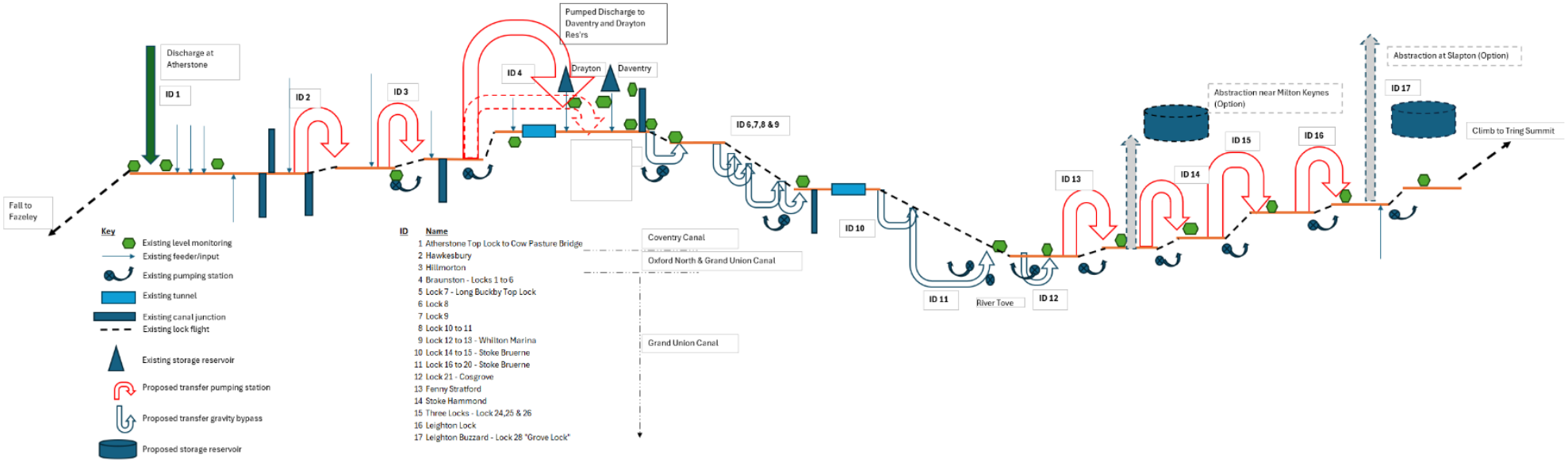
2.4.1 The GUC SRO includes:

- Atherstone outfall to Coventry Canal: A structure for discharging water safely into the canal at Atherstone, at the end of Minworth SRO's Minworth to Atherstone pipeline.
- Canal upgrade works: Upgrades to existing canal assets to facilitate additional flows and to ensure sufficient freeboard to the canal is maintained.
- Daventry and Drayton Reservoirs: Utilisation of wo existing supply reservoirs owned and operated by the Trust, to store water from the canal and to provide drawdown storage to support the transfer of water when the flow from Minworth SRO is restricted.
- Water abstraction from the canal at the southernmost end of the scheme, transfer to a new, nearby bankside storage (AfW GUC storage asset) and then to a new WTW (AfW GUC WTW).
- AfW GUC WTW to underground reservoir near Luton pipeline: Transfer via a new pipeline to an existing underground reservoir near Luton.

2.4.2 A schematic to outline the proposed new transfer facilities along the canal network is shown in Figure 2.2.

[4] Site and Route Evaluation Report

Figure 2.2. GUC SRO schematic



2.4.3 Canal upgrade works: Bypasses

2.4.3.1 Existing gravity and pumped bypasses at locks are used by the Trust for normal operation of the canal network. The bypass structures required for this transfer will be completely separate from existing pumping stations on the canal, to allow the existing canal system to be operated effectively with or without the transfer operating.

2.4.3.2 As shown in Figure 2.2, there are no new bypasses proposed for the Coventry Canal. The majority of the flow along the Oxford Canal will be by gravity; however, a pumping station will be required to bypass the locks at Hawksbury and Hillmorton. The Oxford Canal will then convey water to the GUC and on to a pumping station upstream of Braunston Tunnel. From Braunston to the abstraction and treatment site, a further eight gravity bypasses to 'downflow' locks are required at the Long Buckby lock flight, Stoke Bruerne lock flight and Cosgrove Lock.

2.4.3.3 The final number of pumped lock bypasses will be determined following further engagement and subsequent selection of a fixed abstraction location. For example, if an abstraction near to Slapton were chosen, up to an additional four pumped bypasses would be needed compared to a location near Milton Keynes. Given the complex nature of flood risk and water quality at the abstraction point, some of the pumped lock bypasses might be replaced by a longer abstraction pipeline and higher lift pumps.

2.4.3.4 Gravity bypass structures consist of a screened inlet weir to prevent debris entering, and a pipeline that connects the upstream intake with the downstream outlet structure. Also required will be control kiosks, fencing and a solution to prevent canal boats from obstructing flow whilst minimising impact to boat users.

2.4.3.5 Pumped bypasses are relatively similar to gravity bypasses, consisting of a screened inlet weir to prevent debris entering, and a pipeline that connects the upstream intake with the downstream outlet structure. They also require a new pumping station located near to the intake structure, and a power supply for operation will be delivered to a new on-site transformer from the local grid. Safe access with locked access hatches will be provided for maintenance. Pumping stations will start and stop based upon water level in the canal, controlled by a supervisory control and data acquisition (SCADA) system linked to the WTW to meet the demand required by AfW.

2.4.3.6 Outline drawings showing the proposed bypass structures are given in Annex A (Design Report).

2.4.4 Canal upgrade works: Bank raising

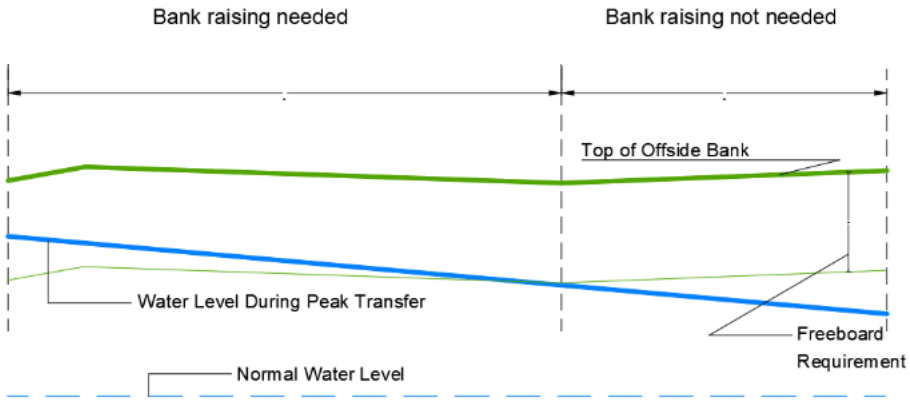
2.4.4.1 Bank and towpath raising will be required to accommodate the increase in water levels. In current normal operation of the canal system, each canal section or 'pound' between locks effectively has a flat (or nearly flat) water profile. This is because water transfers along the canal are limited to the relatively low flows of water released when a lock is operated.

2.4.4.2 When a canal receives a large quantity of rainfall or water inflow, the water elevation rises at the point of inflow to force water along the canal against the friction provided by the canal walls and base. The Trust's current operating level regime has a Normal Operating Zone (NOZ) of Normal Water Level (NWL) +/- 50mm with a freeboard provided to allow for natural variation in the water level e.g. rainfall or river inputs.

2.4.4.3 During scheme operation, proposed flows of up to 115Ml/d will drive water level increases at the upstream end of canal pounds, reducing towards the downstream end of each pound where the level increase will be negligible.

2.4.4.4 Figure 2.3 shows how the need for bank raising is estimated. Where the solid blue line lies below the freeboard line, sufficient freeboard remains available, even at maximum flow. Where the solid blue line lies above or on the freeboard line, bank raising work is necessary.

Figure 2.3. Estimation methodology for the need for bank raising



2.4.4.5 Therefore, bank raising and restoration work, plus modification to the waste weir levels, may be required to allow the additional water during transfer to be retained safely in the canals.

2.4.4.6 The total canal length from the discharge structure near Atherstone to where water will be abstracted for treatment is approximately 131km. Bank raising will not be required along the entire route. Table 2.1 shows the length of canal where raising is assumed, based upon current modelling. The bank will be raised on both sides of the canal, the 'towpath side' and the 'offside'.

Table 2.1. Bank raising along the canal

Bank height level increase (mm)	Bank raising (km)[5]	
	Downstream control level set at NOZ	Downstream control level set at NOZ-
≤100	45.3	9.3
>100 to ≤200	15.3	19.5
>200 to ≤300	27.5	18.5
>300 to ≤400	13.8	5.2
>400 to ≤500	8.2	0.6
Total	**110.1**	**53.2**

2.4.4.7 Preliminary worst-case analysis indicates that bank raising may be required along up to 110km of the route; however, this is currently under review and it is anticipated that operational mitigations will mean the final bank raising requirement is much lower.

2.4.4.8 For the purposes of assessing cost and the construction programme, a conservative approach has been adopted, based upon the maximum lengths of canal bank that will need raising. Preference has also been given to raising the canal banks using a technique that maintains the look of the bank and/or towpath. Where a sheet pile wall is currently used, the

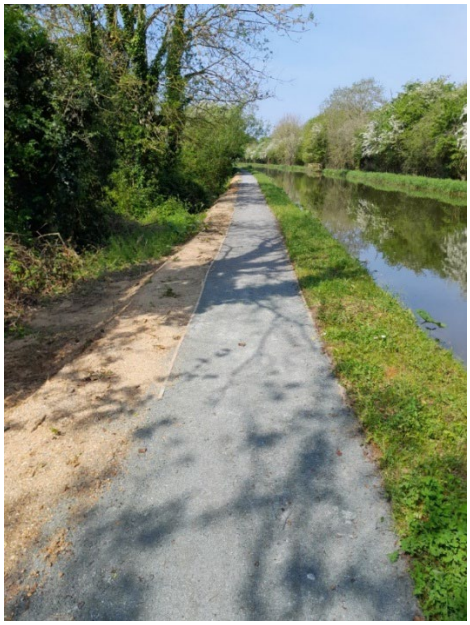
[5] Column 2 shows lengths of bank raising with the downstream control level set at the Normal Operating Zone (NOZ). Column 3 shows lengths of bank raising from setting the water level to the bottom of the Normal Operating Zone (NOZ-) at the downstream end of the four pounds with potentially the greatest bank raising requirements (Coventry Canal 1-1, Oxford Canal 2-1, Oxford Canal 7-8 and GUC 13-14).

use of a sheet pile wall is proposed; where it is a softer edge, a similar soft technique is proposed. Further consideration will be given to this approach during gate 4.

2.4.4.9 There would be significant benefit in reducing the length and height of bank raising, through consideration of options such as installation of a new intermediate lock at a few appropriate locations on pounds with relatively high bank raising. An intermediate lock with a pumped bypass would be similar to existing locks, and would reduce the pound length and proportionally reduce water level increases to push water along the canal. The potential of this option is being discussed with the Trust and, if appropriate, it will be discussed with stakeholders as part of the consultation process.

2.4.4.10 Figure 2.4 shows recent bank raising work carried out by the Trust. In this example, the height of the bank has been increased by approximately 250mm in this example, which is comparable to a significant proportion of the bank raising expected as part of GUC SRO.

Figure 2.4. Example of completed bank raising work recently carried out by the Trust



2.4.5 Canal upgrade works: Waste weirs, canal widening and bridges

2.4.5.1 Existing waste weirs (which control the amount of water overflowing from the canal) will need to be slightly raised so that water loss to adjacent watercourses does not significantly change during scheme operation. Most weirs will require only minor adjustments, but there are 17 weirs in the longer pounds that will require >100mm increase in weir level.

2.4.5.2 Piped bypass arrangements or canal widening will be needed at four narrow points along the canal to avoid exceeding velocity limitations for canal operation, set by the Trust at 0.3m/s.

2.4.5.3 The air-draught (headroom) at bridges and tunnels has been assessed using an ‘envelope’ of possible maximum combinations of boat height and width. This assessment identified four bridges on the Coventry, Ashby and Oxford Canals where single narrowboats could experience air-draught issues in mid channel; but, in all cases, there is sufficient air-draught if navigated off-centre. On the GUC, no issues were identified for single narrowboats or for wider cruisers; however, at six bridges there is a risk of insufficient air-draught where two narrowboats are strapped side by side, and insufficient channel width to navigate off-centre. At gate 4, further detailed surveys will be carried out at bridges where there is a risk of insufficient air-draught, so that appropriate remediation can be implemented.

2.4.6 Water storage: Daventry Reservoir and Drayton Reservoir

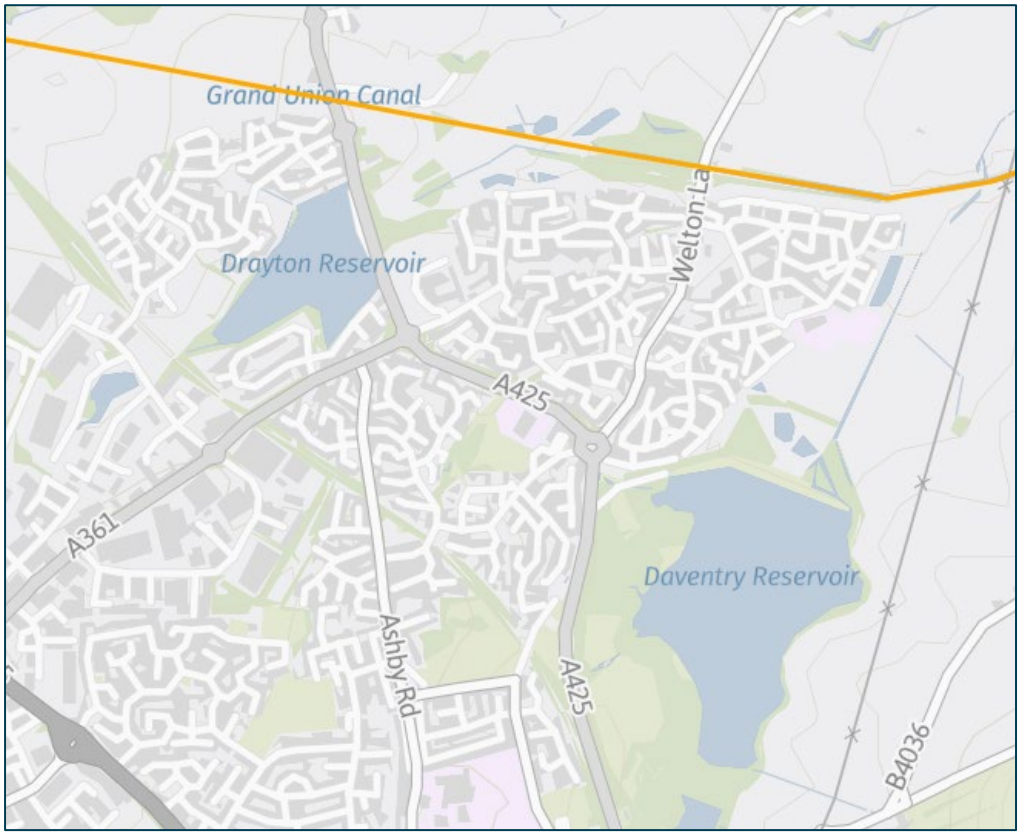
2.4.6.1 Minworth SRO will provide the sole source of water for the GUC SRO. Recycled water from Minworth WwRC currently discharges into the River Tame, which is a tributary to the River Trent. Diverting flow to the GUC SRO will therefore lead to a reduced flow in the River Trent. Existing abstractions along the River Trent are subject to a Hands-Off Flow (HoF) of 2,650Ml/d measured at North Muskham. The operation of Minworth SRO to support GUC could cause the HoF to be met earlier than it would typically, affecting water availability to users of the River Trent.

2.4.6.2 The use of storage has been identified as the preferred means of mitigating any increase in the number of occasions that flow in the River Trent reduces to the HoF (or lower) as a result of Minworth SRO operation. GUC SRO could draw down storage to support the ongoing utilisation of the transfer, and in turn free up Minworth WwRC to discharge its full capability into the River Tame to support low flows. Worst-case drought-year modelling, using historic drought records, shows the annual storage need of 1,265Ml, which is equivalent to 11 days' scheme operation at full flow.

2.4.6.3 The GUC SRO proposes five days' storage (575Ml) is to be included at the abstraction location, at a new AfW GUC storage asset. Six days' storage (690Ml) must therefore be provided at another location. A list of potential storage options was screened, and Daventry and Drayton Reservoirs, two existing impounding structures owned and operated by the Trust as a feed to the GUC, were identified as suitable to provide the required storage.

2.4.6.4 The location of the Daventry and Drayton Reservoirs in relation to the GUC is illustrated in Figure 2.5. The reservoirs are to the northwest and northeast of Daventry, at a summit point c40km south of the discharge structure near Atherstone. The reservoirs are not hydraulically connected to one another, and both discharge into the Braunston summit pound of the GUC.

Figure 2.5. Location of Daventry and Drayton Reservoirs



2.4.6.5 Currently, the reservoirs are operated to capture and store runoff from the local catchments, for release into the canal system to sustain water levels and support navigation. To provide long-term storage for the GUC, water is proposed to be pumped through a twin [redacted]mm diameter pipeline from a canal pumping station upstream of Braunston Tunnel. One branch will take flow directly to the GUC downstream of Braunston Tunnel, and the other will forward flows into the reservoirs (see Figure 2.6).

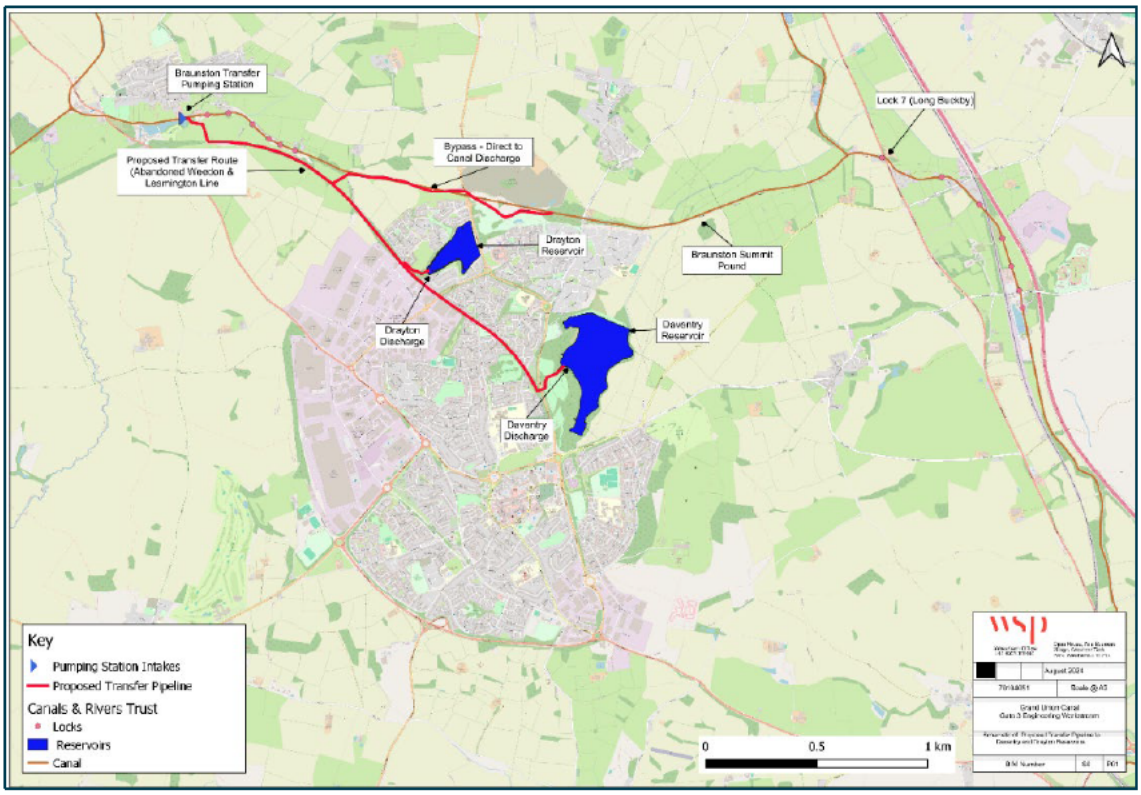
2.4.6.6 The pipeline feeding water into the reservoirs is proposed to be laid along an abandoned railway line bed, connecting to a [redacted]mm offtake at the existing inlet structure to Drayton Reservoir. The 700mm pipeline will continue along the abandoned railway, crossing in an underpass to the A425 to join the existing culvert and discharge into Daventry Reservoir. A new discharge structure will be built here for the delivery pipe.

2.4.6.7 Flow through the reservoirs will be limited to 62.9Ml/d (the outflow capacity of the channels from the reservoir to the GUC); 43.6Ml/d at Daventry and 19.3Ml/d at Drayton. The bypass transfer pipeline from Braunston pumping station to the canal downstream of Braunston Tunnel will enable flow to by-pass when work is being undertaken on the reservoirs, tunnel or pipeline.

2.4.6.8 No works are proposed to either reservoir embankment. At Drayton Reservoir, the existing overflow will be used but a new discharge chamber installed to control the flows into the existing overflow culvert which leads to an open channel and then to the GUC. At Daventry Reservoir, there are two existing overflow structures which will also remain unaffected.

2.4.6.9 The initial option considered was to carry 115Ml/d through the reservoirs, but the costs are significant and the works would be disruptive. It is unlikely the cost and disruption could be justified owing to the relative infrequent increase to the maximum 115Ml/d utilisation (expected to be summer focused). A further evaluation of this position will be undertaken in gate 4, after the Trust has considered its own future investment plans and once the reservoir users have been consulted. An alternative option is to increase the size of the bypass structure proposed.

Figure 2.6. Proposed pipeline route to Reservoirs and bypass to Braunston Tunnel



2.4.7 Site selection: AfW GUC storage asset and WTW

2.4.7.1 In gate 2, an example abstraction location and site for the new water storage reservoir, AfW GUC storage asset, and new AfW GUC WTW to the south of Leighton Buzzard was used for the purposes of reporting to RAPID. The advantages of this site were noted as being close to the GUC, having the space required for the WTW and storage, and avoiding chalk stream interaction to the south of the Tring summit, which is required by the EA. Further investigations in gate 3 have identified a number of constraints when this site was run through the evaluation and consultation process, including the site's location within the Green Belt. Planning policy, as set out in the Water Resource Infrastructure National Policy Statement (WRINPS) requires consideration of other sites outside of the Green Belt, or sites within the Green Belt that are less harmful.

2.4.7.2 In March 2023, post gate 2 submission, the site was designated as a Suitable Alternative Natural Greenspace (SANG) by Central Bedfordshire Council.

2.4.7.3 The site is designated as an Outdoor Sport Leisure and Open Space Site, and sits within the Greensand Ridge Nature Improvement Policy, as set out in Central Bedfordshire Local Plan.

2.4.7.4 Gate 3 site identification and assessment process aimed to find suitable locations for abstraction and treatment works for non-statutory consultation, considering engineering, environmental, social, planning, and land criteria. This process is described in Annex C1.3 (Planning and Consents Strategy Report). Sites needed to be at least 10ha, enable the transfer of water to an underground reservoir near Luton, and preferably be outside or less harmful to the Green Belt. The search area was expanded based on the existing canal network and existing AfW storage assets, avoiding areas such as ancient woodlands, scheduled monuments, and flood zones. Above-ground development within the Chilterns National Landscape was discouraged if alternatives were available.

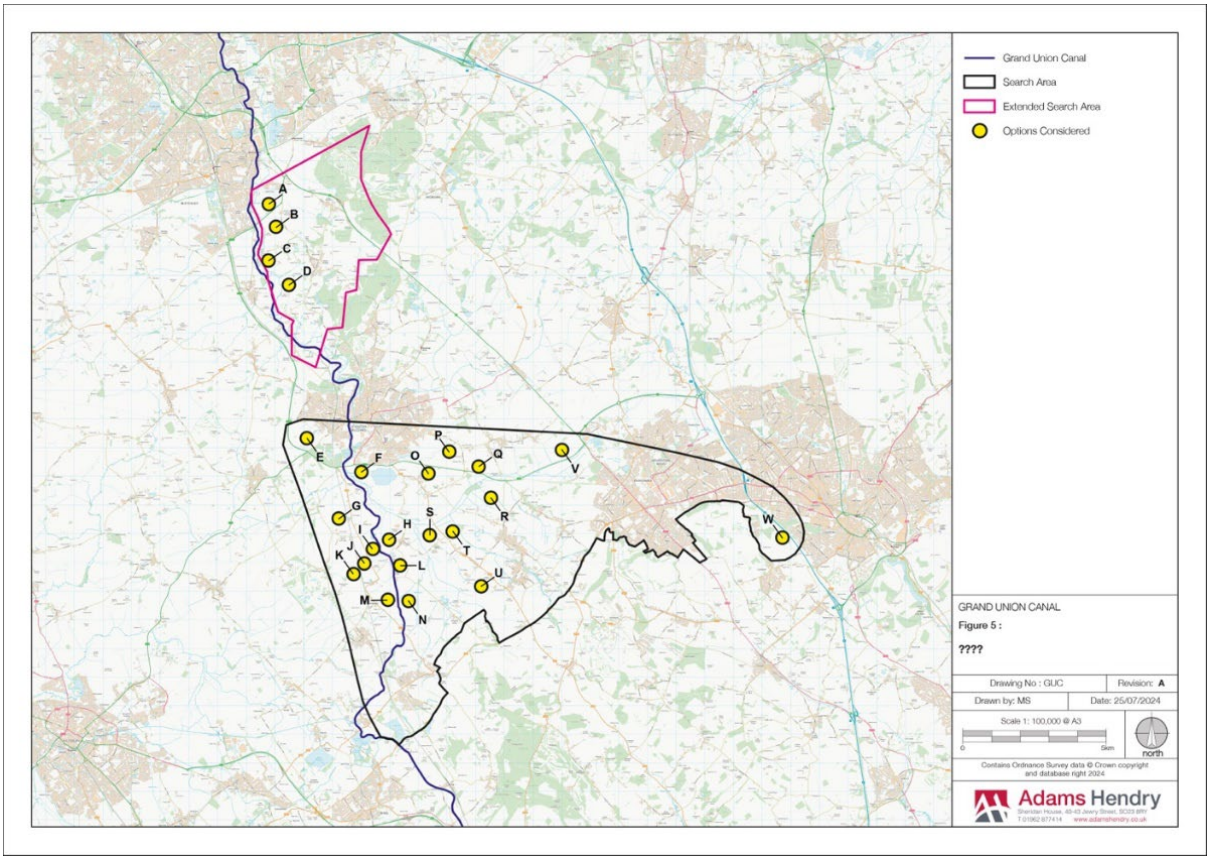
2.4.7.5 In total, 23 sites were identified within the search area. These were assessed in line with a methodology which took account of the project-specific All Company Working Group (ACWG) design principles and a multi-disciplinary approach to assessment of sites. The outcome of the assessment process is available in Annex C1.3 (Planning and Consents Report).

2.4.7.6 Following detailed appraisal, three sites out of the 23 taken forward to non-statutory consultation were identified as having greater potential for development. These are shown in Figure 2.7 as:

- Site B (water storage and WTW)
- Site H (water storage and WTW)
- Site H (water storage) with Site P (WTW)

2.4.7.7 These conclusions reflect the information available at the time of optioneering, and are reached in advance of planned detailed site surveys and investigations. These assessments will be reviewed prior to selection of preferred option(s) in gate 4, along with any new sites derived through information received during subsequent work and/or from the non-statutory consultation.

Figure 2.7. Map of 23 sites identified within the search area



2.4.8 Abstraction

2.4.8.1 At the southern section of the scheme, water will be abstracted and pumped through a new pipeline to a nearby new AfW GUC storage asset and AfW GUC WTW.

2.4.8.2 The inlet and general arrangement will be similar to the screened inlet for a lock bypass. Screens will be required and sized to minimise the risk of entrainment of fish into the system.

2.4.8.3 Abstracted flows will pass into a wet well, from which pipelines will transfer the water to a low-lift pumping station. This pumping station will transfer the water to the new AfW GUC storage asset.

2.4.9 Storage: AfW GUC storage asset

2.4.9.1 Bankside raw water storage is proposed to be provided on the GUC to facilitate the safe and controlled operation of the canal at low rates of change, to provide buffer storage to cope with any pollution events, and for when flow from Minworth SRO is interrupted during high demand periods. Storage of the abstracted water at the new AfW GUC storage asset will also encourage settling out of any sediment in the transfer flows to reduce load on the new AfW GUC WTW.

2.4.9.2 Detailed geotechnical and topographical investigations have not been possible to date, although a desk-based review of the geotechnical context, landform and utility searches has been undertaken to inform the assessment.

2.4.9.3 During gate 4, when the depth of the required storage asset is known, modelling will be undertaken to define the most appropriate peak flow rate, taking into account costs to construct and any impacts on local water courses, acceptable to the EA, or risks of flooding to third parties or designated sites. A design flow rate will be agreed with the panel engineer responsible under the Reservoirs Act.

2.4.9.4 The AfW GUC storage asset will also be provided with an ungated spillway to ensure that the stability of the reservoir embankment is not compromised by overtopping. The capacity of the spillway weir and channel will allow peak pumped inflow plus the effects of intense rainfall on the surface of the reservoir to pass without the water level rising to cause any risk to the embankment. System interlocks will be installed so that the abstraction pumping station will shut down when the reservoir is full, to avoid the combination of inlet flow and intense rainfall.

2.4.10 Treatment: AfW GUC WTW

2.4.10.1 As described in Section 2.4.9, the site for the new AfW GUC WTW has not yet been selected. Without detailed topographical or geotechnical information, the layouts remain conceptual at this stage, as shown in Figures 2.8 and 2.9.

Figure 2.8. Conceptual schematic of AfW GUC WTW

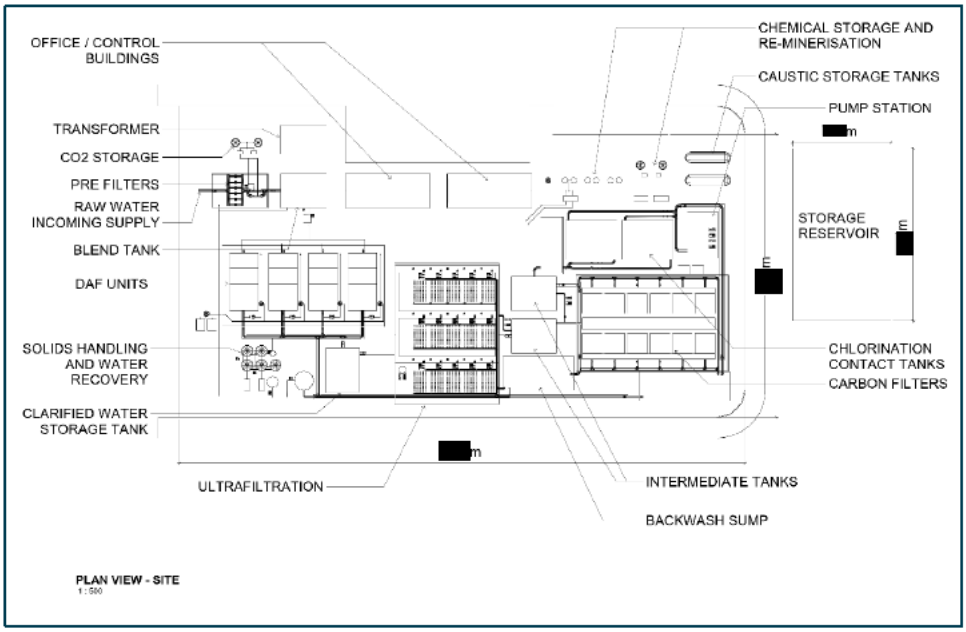
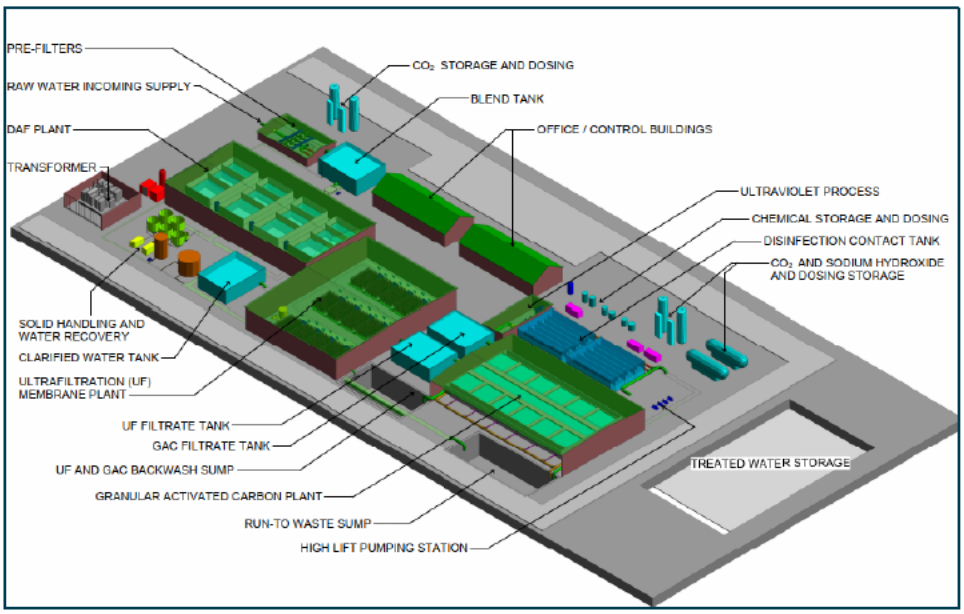


Figure 2.9. Indicative AfW GUC WTW layout



2.4.10.2 The AfW GUC WTW will include a pumping station to take water from the AfW GUC storage asset to the WTW inlet, water treatment tanks, buildings and equipment. The treatment process is likely to include process stages as shown in Figure 2.8; however, the final design will be determined by a Competitively Appointed Provider (CAP).

2.4.10.3 Final high-lift pumps will transfer potable treated water from a storage tank, via a new pipeline to an existing underground reservoir near Luton.

2.4.10.4 The Drinking Water Quality Risk Assessment (DWQRA), several years of canal water quality monitoring data, water quality modelling, treatment process laboratory trials and Drinking Water Safety Plan (DWSP), as described in Section 3, have been used to define the design constraints required to support the proposed AfW GUC WTW.

2.5 Design risks

2.5.1 Risks associated with project design are outlined below. Costing provision has been included for all of the risks identified, and these risks will be addressed and mitigated by work planned in gate 4.

2.5.2 Geotechnical and topographical studies in gate 3 are based on desk-based findings and light detection and ranging (LIDAR) surveys. In gate 4, field-based investigations will be undertaken along the canal and at the locations of the new AfW GUC WTW, AfW GUC storage asset, and the route for the pipeline to the existing underground reservoir near Luton. The costs, carbon estimates and construction programme have therefore included substantial risk allowances, as layouts and designs could be affected by the gate 4 investigations.

2.5.3 Land purchase is a risk. The SRO has a land strategy that outlines its preference to voluntarily acquire land; but, where it needs to, it can fall back on compulsory acquisition (CA) powers to prevent programme impact.

2.5.4 The hydraulic model is still in development, with a conservative approach taken to expected water level rises along the GUC during scheme operation. The water level modelling, which will result from the additional transfer flow, will be further refined in gate 4. This affects the amount of canal bank raising and potential for impact on existing canal infrastructure. A series of sensitivity tests will be run to establish the risk of reduced freeboard to the canal when the hydraulic characteristics are varied, and consideration given to represent different levels of canal channel maintenance.

2.5.5 The current water quality modelling results are indicative, reflective of monthly sampling and analysis over the last four years. The treatment process train at the new AfW GUC WTW is therefore currently conservative in design.

2.5.6 The current process design for the new AfW GUC WTW is based on the jar testing undertaken to date, and on a DWQRA, along with an understanding of the existing chemistry of the potable water in AfW distribution system.

2.5.7 It is possible that algae growth and blooms will occur in the new AfW GUC storage asset, posing a risk both in terms of water treatability and customers' taste and odour complaints. Storage and WTW designs will address this risk.

2.6 Potential pollution events

2.6.1 Initial considerations indicated that pollution events in the canal are low frequency and low impact. The scheme incorporates five days' bankside storage at AfW GUC storage asset at full flow rate. Along with a further six days at the Daventry and Drayton Reservoirs, this should provide significant protection to the system when allied to water quality monitors in the canal. Depending upon the location, even at full flow, water will take several days to travel along the system.

2.6.2 In the event of pollution, the abstraction to the AfW GUC storage asset will be closed and polluted pound(s) will be isolated. The polluted pound(s) will be subject to standard emptying and cleaning processes. Operational experience indicates that this process will take less than 10 days.

2.6.3 Further assessment will be carried out in gate 4 on the risk of pollution inputs, and the sensitivity of the potable water treatment process to a range of pollution occurrences, taking account of operational rules and the Trust's arrangements for dealing with pollution.

2.7 Security and Emergency Measures Direction (SEMD) compliance

2.7.1 As part of the project scope in gate 4, further consideration will be given to GUC SRO's SEMD compliance. A Hazard and Operability Study (HAZOP) will be carried out, following the guidelines set by the Drinking Water Inspectorate (DWI), to identify security threats and vulnerabilities. This will include consideration of suitable and effective engagement concerning asset and system dependencies from and to other companies and/or stakeholders, with advice and guidance sought from the Centre for the Protection of National Infrastructure (CPNI) and National Cyber Security Centre (NCSC) as appropriate.

2.7.2 From this study, emergency plans will be developed to mitigate the effects of a civil emergency, and to ensure the continuity of water supply. Robust physical and cyber security measures will be developed to safeguard facilities.

2.7.3 During operation of the GUC SRO, regular audits and self-assessments will be conducted to assess the effectiveness of security protocols, and detailed compliance documentation will be maintained to record all efforts and actions taken. Training and awareness programs on SEMD requirements and emergency procedures will be in place for staff, ensuring readiness for an event.

2.8 Independent design review (IDR)

2.8.1 In gate 3, an IDR of the AfW GUC WTW basis of design has been carried out. The overall approach for the IDR has been to carry out a high-level assessment of the robustness of the design processes, the source data, design parameters and assumptions utilised, proposed treatment technologies considered and compliance with Industry best-practice or relevant company asset standards.

2.8.2 The IDR confirmed the need for the construction of a pilot plant for testing and validating treatment technologies, optimising design parameters, and ensuring regulatory compliance.

2.9 Digital twin

2.9.1 There has been a significant amount of work undertaken through gate 3 which is creating the building-blocks of a digital twin for the scheme. The focus has been on identification of the desired outcome from a digital twin, and how it will contribute to GUC SRO operating and utilisation scenarios.

2.9.2 The Aquator software platform model of the GUC has been developed to gain a better understanding of the way in which outages along the GUC SRO would affect the water available for use within AfW's central area. This work has enabled a holistic assessment of system resilience, and enabled a comprehensive risk analysis of potential outages along the GUC SRO and its impact on water availability. AfW's Water Resource Zone 3 (WRZ3) and the GUC system are represented within the model as groundwater components, including the supply from Grafham Reservoir as a bulk source.

2.9.3 At the core of a future digital twin will be data integration technology which can interface with sensors, databases and analytical tools to provide real-time, short- and medium-term forecasts of demand, inflows from feeders, and weather impacts.

2.9.4 The digital twin will be further developed in gate 4, with the potential to significantly enhance the efficiency, cost-effectiveness, and decision-making of the project. By enabling real-time monitoring and predictive maintenance, the digital twin will allow for early detection of

issues, reducing downtime and extending the lifespan of equipment. It will also have the potential for operators to simulate various scenarios, optimising resource allocation and ensuring investments are made where needed. Key activities and dates are given in Table 2.2.

Table 2.2. Key activities for digital twin development

Key activity	Date
Workshop to establish full scope of digital twin	Q1 2025
Set out digital twin proposals for approval	Q2 2025
Development of models as part of gate 4 scope, providing the foundation to a future digital twin	Q3 2026
Develop performance and specification requirements for tender documentation	Q1 2027
Start of digital twin development (as part of DPC procurement)	Q1 2029

2.9.5 The digital twin may be used to improve water quality management by continuously monitoring key parameters and quickly addressing contamination risks, while also simplifying regulatory compliance and improving transparency in stakeholder communications. Additionally, it could be utilised to enhance stakeholder understanding and support by making complex project details easier to visualise, ensuring that the GUC SRO aligns with public expectations and needs.

2.9.6 The digital twin will be developed and defined in gate 4 so that an appropriate output specification can be incorporated into the contract for construction and operation.

2.10 Utilisation

2.10.1 Water resources network modelling was used to consider the demand profiles generated when a new water resource is introduced into the system, primarily to replace groundwater sources that feed into chalk streams which are vulnerable to climate change. Monthly utilisation profiles were provided for the GUC SRO, aligned with the outcomes of the WRMP24 and the WRSE Regional Plan in terms of the case of need.

2.10.2 Scheme utilisation is expected to be greatest during the summer months, at around 80% during dry-year demand events. Utilisation will increase during droughts (>1 in 50 years).

2.10.3 Two utilisation scenarios have been modelled for the GUC SRO, as shown in Table 2.3. The first is for the normal dry-year demand, and the second covers a drought-year demand. The GUC SRO may also be required to mitigate other supply issues, such as outage or source shutdown due to pollution events within AfW's supply area.

Table 2.3. Anticipated scheme utilisation

Period	Utilisation (%)	
	Normal dry year	Drought year (>1 in 50 year)
October to April	20	20
May	55	65
June to August	80	100
September	55	65

2.11 Water resource benefit

2.11.1 Capacity requirements and utilisation profiles have been used to establish that the scheme will improve the Average Deployable Output (ADO) of the AfW system by providing a drought-resilient supply source of 100Ml/d ADO. This spare capacity can be utilised when demand increases or supply is lost, which means that new sources of water will only need to be fully utilised during the summer.

2.11.2 The scheme has been sized to take account of AfW's limited water storage facilities and to provide for any losses during the treatment process. The scheme will convey a year-round operational minimum base flow of 23Ml/d, representing the minimum flow required to keep treatment processes at Minworth functioning.

2.11.3 Throughout gate 3, the baseline Aquator software platform model of the canal system has been further developed and validated. The GUC SRO has been applied to this model, including operational control parameters for controlling levels in canal pounds along the SRO transfer route. Annex A4 (Gate 3 Modelling Report) explains the modelling tasks, investigations, outcomes and further work required in more detail.

2.11.4 The utilisation of the GUC SRO will maintain canal water levels and therefore enable reduced use of the Trust's water storage assets. This will create greater resilience for the system because, in times of hydrological drought, the storage assets are more likely to be full and ready to support water shortages in the canal. There are times in some drought years where the GUC SRO is predicted to convey reduced flow, including a few instances where the transfer of water stops for short periods before it recovers. Under these circumstances, water supply to the canal will be maintained through utilisation of storage at Daventry and Drayton Reservoirs and the new AfW GUC storage asset, and utilisation of Grafham Water as a supply source when required.

2.12 Long-term opportunities and wider benefits

2.12.1 Within the scope of works required to construct the infrastructure for transfer of water from Minworth SRO to the new AfW GUC WTW, there are opportunities to provide enhancement to the environment. The project is continuing engagement with key stakeholders, including canal user groups, to further develop these opportunities. These enhancements can mitigate potential environmental losses elsewhere, and increase the overall biodiversity and natural capital of the scheme. The GUC SRO also has the potential to deliver significant wider resilience benefits to the natural environment, as well as enhancing canal user experiences.

2.12.2 The scheme has the potential to enhance the public value of the canal by improving access, flood resilience, and visitor experiences at historic assets. Remediation and upgrade work can also improve interactions between the canal and adjacent rivers.

2.12.3 Additionally, the scheme will provide a new revenue stream for the Trust, enabling improvements to the existing canal network, extending its life, and enhancing its performance as a valuable heritage asset. The scheme's operation will increase the canal's navigation resilience by ensuring water levels are maintained during drier years.

2.12.4 As well as wider social benefits from job creation, education and training as part of the main works contracts, there are specific public space enhancements that can be delivered as part of the development of the GUC SRO. The main opportunities are associated with the canal works, and in particular the bypass locations. These will be location-specific, and the initial evaluation of opportunities at each bypass location is provided in Annex A (Design Report). The construction of the new AfW GUC storage asset and modification of the Drayton and

Daventry Reservoirs also offer opportunities for recreational enhancement, which are described in the same annex.

2.13 Solution scaling

2.13.1 The SRO partners provided WRSE with multiple costed options during the development of its Regional Plan, including a phased option to build in two parts. The revised draft WRSE Regional Plan has selected the GUC transfer proposal as being required as a single 115Ml/d phase.

2.14 Infrastructure resilience to the risk of flooding

2.14.1 Flood risk to various scheme components has been assessed, and proposed design solutions identified to ensure safe operation and management.

2.14.2 There is current surface water and river flood risk from the GUC and local rivers. It is unlikely that the works to be carried out for the canal will affect either the rivers or the surface water flooding. A detailed flood risk assessment for GUC SRO will be carried out in gate 4 as part of the Environmental Impact Assessment (EIA). This will assess the risks of all forms of flooding to and from the development, and demonstrate how these flood risks will be managed.

2.14.3 Any potential for flood risk from the operation of the GUC SRO has been addressed through the operational design philosophy. The SRO can be shut down through closure of bypasses as soon as any flood risk in the watercourses that interact with the scheme (the Rivers Tove and Ouzel) is highlighted to the operators by the EA.

3. Drinking water quality

3.1 Update since gate 2

3.1.1 The GUC SRO water quality monitoring programme has continued through gate 3, sampling at Minworth WwRC and along the canal transfer route. The monitoring suites have been updated and expanded through engagement with regulators, the ACWG Water Recycling sub-group, and to ensure consistency with monitoring suites for emerging contaminants across other SROs where necessary.

3.1.2 Engagement has continued with key regulators (EA, DWI and Natural England (NE)) and ST's water quality technical experts on scheme development, changes to the monitoring programme, and drinking water risk assessment. This includes the addition of Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) monitoring throughout the transfer route, as well as the addition of monitoring at the Daventry and Drayton Reservoirs, following their inclusion in the scheme, to enhance resilience and mitigate risks associated with the HoF on the River Trent. The scheme is compliant with the sampling requirements of Regulation 15 of the Water Supply (Water Quality) Regulations 2016.

3.1.3 The hydraulic models that represent the movement of water through the canal have been refined during gate 3, enabling the modelling of how the water discharged from Minworth AWTP will mix with current canal water at the discharge point in Atherstone, and how this water will continue to mix through the transfer route until abstraction for treatment at the southerly point. This model has provided a detailed and realistic representation of the water that will require treatment prior to entering AfW's network.

3.2 Water Quality Risk Assessment (WQRA)

3.2.1 The WQRA undertaken to support the RAPID gate 2 submission was used as the basis for this gate 3 iteration. Collaborative working groups were held with key stakeholders from ST, AfW and the relevant design teams to review limiting hazards and likelihood scores using additional information gathered during the gate 3 water quality monitoring programme.

3.2.2 SRO partners met with the DWI to provide updates on the WQRA in May 2024. The project team presented the gate 3 scheme overview and approach to be followed, outlined in Annex B1.12 (Water Quality Risk Assessment). The WQRA outcomes were discussed, including a specific update on new limiting hazards for gate 3, and areas with a decrease/increase in perceived likelihood risk.

3.2.3 Chromium (total and VI dissolved), Sodium (dissolved) and Chloride were added as new limiting hazards for gate 3, due to multiple samples being detected above regulatory prescribed concentration values (PCVs). High risk scores were assigned to Chromium, as there were several samples detected above the regulatory and recast Drinking Water Directive (DWD) PCVs. Moderate risk scores were assigned for Sodium and Chloride, as there were only two samples detected above their respective PCVs and the possibility that the Sodium sample exceeding the 200mg/L PCV was related to seasonal surface water run-off.

3.2.4 Metaldehyde, Tributylin Compounds (TBT) and Triclosan were given a decrease in likelihood scores for gate 3 from gate 2, due to their concentrations remaining significantly under regulatory PCVs, as well as a greater understanding of their health-based guidance limits.

3.2.5 The 10 determinands to be allocated an increase in likelihood for gate 3 from the gate 2 are listed in Table 3.1. Sulphate, Mercury (total and dissolved), Corrosivity and PFAS substances were given the greatest increase in likelihood, due to an increase in the number of samples exceeding regulatory PCVs/guidance limits. Taste underwent an increase in likelihood post-control, due to no guarantee that the consumer would accept the source change of water.

Table 3.1. Determinands with scores that have increased between gate 2 and gate 3

Determinand	Consequence score	Gate 2 likelihood score	Gate 2 risk score (consequence x likelihood)	Gate 3 likelihood score	Gate 3 risk score (consequence x likelihood)
Manganese (total and dissolved)	3	4	12	5	15
Sulphate	3	3	9	5	15
Pesticides	2	3	6	4	8
Nitrate	5	4	20	5	25
Mercury (total and dissolved)	5	3	15	5	25
Corrosivity	3	3	9	5	15
Taste	3	1 (post control)	3	2 (post control)	6

Determinand	Consequence score	Gate 2 likelihood score	Gate 2 risk score (consequence x likelihood)	Gate 3 likelihood score	Gate 3 risk score (consequence x likelihood)
Ammonium	2	4	8	5	10
Fluoranthene (benzo(b)fluoranthene)	4	4	16	5	20
PFAS Substances	5	3	15	5	25

3.3 Drinking Water Safety Plan (DWSP)

3.3.1 Context

3.3.1.1 The DWSP has been developed based on the approach specified in AfW's DWSP methodology and the guidance from the World Health Organization (Water Safety Plan Manual Second Edition 2023). It provides an update from the RAPID gate 2 submission with regard to drinking water quality considerations and potential risks to drinking water quality, supply issues and resilience.

3.3.1.2 The main focus of the DWSP is to:

- Identify hazards within the catchment and hazards resulting from storage, treatment and distribution.
- Review proposed mitigations for regulated and emerging contaminants identified as hazards.
- Identify further mitigation where required.
- Satisfy relevant regulatory requirements.
- Consider stakeholder engagement to date, including items identified by both water company and DWI, and how they will be addressed.

3.3.1.3 The implementation of a comprehensive DWSP is essential for ensuring the provision of safe, reliable and clean drinking water. By integrating suggested control measures that encompass the entire water supply system from catchment to consumer, the DWSP for the GUC SRO will help to identify potential hazards and implement control measures proactively.

3.3.1.4 The success of the DWSP hinges on continuous monitoring, regular review, and the commitment to adapt and improve in response to new challenges such as climate change and emerging contaminants.

3.3.2 Updating the DWSP

3.3.2.1 Regulation 27 of the Water Supply (Water Quality) Regulations 2016 requires water companies to carry out a risk assessment (WQRA, Section 3.2) of each of its WTWs, including the water source and catchment, and the connected supply system.

3.3.2.2 Regulation 28 requires a report of each risk assessment to be provided to the Secretary of State (SoS). For example, each year on or before 21 October, AfW updates its report of

each water supply system that covers all hazards and hazardous events identified. This process involves the senior scientific officer as well as water quality managers to ensure changes have considered compliance exceedances, reportable events or operational/procedural changes that may alter risk levels. The report is then sent to the DWI.

3.3.2.3 AfW also hosts meetings throughout the year to discuss risks identified within the DWSP process and any modification to control measures. Section 7 explains the procurement route for the GUC SRO in greater detail. It is understood that the project will be procured by Direct Procurement for Customers (DPC), in which a third party may operate and maintain the system. If this third party is not a water company, the project team will need to better understand the implications, given that the DWI has powers to regulate water companies only. This is reflected as a key risk to GUC SRO (see Section 6).

3.4 Next steps and future engagement

3.4.1 Targeted engagement on the change of water source will commence a year before the completion of the scheme is required in 2032 (engagement from 2031). Insights gathered nationally demonstrate that customers do not believe detailed engagement is required earlier than this.

3.4.2 Annex E1 (Stakeholder Engagement Report) sets out the planned approach to engagement, communication channels and language, based on customer research conducted across the industry to date.

3.4.3 During gate 4, customer research will be undertaken with the communities impacted by the recent Sundon Reservoir water source change for AfW customers (see Section 9). Similar to the GUC SRO, Sundon Reservoir provides a blended source water. The research will assess the communications around the change in water source, the impacts experienced by customers, and areas of improvement, to inform both Minworth and GUC SROs.

3.4.4 The DWSP is a live document and will be iterated throughout the development of this SRO, through construction, and during its operation.

4. Environmental

4.1 Overview

4.1.1 To support the gate 3 submission, the GUC SRO partners have considered the environmental assessments completed at gate 1 and gate 2, comments from regulators and the assurance processes, and recommendations for further work. Understanding of GUC SRO has been built up over the last four years, and forms the basis of the gate 3 monitoring and assessment programme, with key results and recommendations presented in further detail across a series of supporting annexes (see Section 13).

4.1.2 Key activities in gate 3 include: monitoring and assessment of aquatic ecology within the canals, a hydromorphological assessment of sediment mobility, assessment of flow impacts on fish, an invasive non-native species (INNS) risk assessment, terrestrial ecology surveys (water voles, mink, otter, bats, etc), preliminary ecological appraisals to cover reservoir assessments, WFD, Habitats Regulations Assessment (HRA) and National Landscape assessments.

4.2 Water Framework Directive (WFD) assessment

4.2.1 Context

4.2.1.1 The gate 3 WFD assessment builds on the WFD assessments at gate 1 and gate 2, and is supported by more detailed modelling results that increase the certainty and clarity of the assessment. The assessment continues to follow the Level 1 (Basic Screening), and Level 2 (Detailed Impact Assessment) format employed at the previous gates, and as outlined in the ACWG framework for WFD.

4.2.1.2 Only one transfer option (115Ml/d) has been included within this WFD assessment. There will be a minimum base flow transfer of 23Ml/d, but this WFD assessment has been undertaken on the worst-case scenario of 115Ml/d. It is not anticipated that watercourses that feed the canals will be affected by the transfer operation, owing to modification of waste weirs, so they have been excluded from this WFD assessment.

4.2.1.3 For gate 1, Level 1 screening was completed in January 2021 and updated in March 2021. Two-level screening was conducted, further WFD assessments were recommended because potential risks were not ruled out.

4.2.1.4 For gate 2, the same two-level screening approach was followed in July 2022. Given the need for a ‘single source solution’ at gate 2, the WFD assessment was undertaken on a refined list of waterbodies. The assessment included 26 waterbodies, with seven being screened out at Level 1. The remaining 19 waterbodies were found to have potential compliance risks. It was acknowledged that the majority of risks were anticipated to be minimised through design of water quality treatment or structures, and that operational parameters will reduce risks to an acceptable level.

4.2.1.5 The gate 2 assessment recommended continued consultation with the EA on key risks, the collation and review of artificial and heavily modified waterbodies (A/HMWB) measures information, making changes based on the Cycle 3 baseline data, continuing the ongoing hydrological/water quality/ecological and sediment baseline, and obtaining further information on the design and operation of the scheme to improve accuracy of the assessment. These actions have all been implemented at gate 3 and are utilised where relevant.

4.2.2 Update on assessment

4.2.2.1 At gate 3, the total number of waterbodies has decreased from 26 to 19. There were 11 waterbodies included at gate 2 due to their connections with the canals via waste weirs; however, the raising of canal banks and waste weirs to contain the entirety of flow within the canals (as detailed in updated design reports) would mean no further impact to these waterbodies. There has also been an addition of four new waterbodies as a result of proposed works to existing pumping stations or the construction of new pumping stations.

4.2.3 Level 1 screening summary

4.2.3.1 Six waterbodies were carried through to Level 2 assessment due to impacts associated with the new discharge and transfer. Each of these waterbodies had a maximum Level 1 impact score of ‘2’. The remaining waterbodies were screened out and did not require Level 2 assessment.

4.2.3.2 Seven of the waterbodies screened out had a maximum Level 1 impact score of ‘0’. This low impact score was due to the laying of pipelines within those waterbody catchments where no watercourses are crossed.

4.2.3.3 The remaining waterbodies were screened out with a maximum Level 1 score of '1', assigned due to impacts relating to construction of a new outfall, the pipeline crossing of a watercourse, the construction of a new pumping station or the construction of a new outfall structure to a reservoir.

4.2.4 Level 2 screening summary

4.2.4.1 Only one activity assessed at Level 1 screening, the transfer of water, was considered to be a great enough risk to carry waterbodies through to Level 2 WFD assessment. This activity posed a risk to six waterbodies:

- Coventry and Ashby Canals
- Grans Union Canal, Braunston summit
- Grand Union Canal, Milton Keynes to Braunston summit
- Grand Union Canal, Milton Keynes to trough pound
- Grand Union Canal, Tring summit to Milton Keynes
- North Oxford Canal

4.2.4.2 The findings of the Level 2 WFD assessment are available in detail in Annex B3.18 (WFD Report), and identified six potential impacts:

- Changes to channel footprint (in relation to water level and flow increases in the canals).
- Changes in flow velocity and volume.
- Changes in sediment mobility, transport and deposition.
- Changes to waterbody hydromorphology leading to changes in 'river' processes and habitats upstream and downstream.
- Changes in water quality due to new or changed discharge of recycled water into surface waterbody, including the potential mobilisation of contaminants from sediment.
- Changes in INNS present in the surface waterbody.

4.2.4.3 The findings of the Level 2 WFD assessment are that five of these six risks can be discounted for all waterbodies, but there are potential WFD compliance risks relating to changes in water quality due to the transfer of water into the canal network for all six waterbodies, as outlined in Annex 4.4 (Water Quality Modelling Report). The process design of Minworth AWTP will need to be examined further at gate 4. Provided the required level of treatment is achieved, there are no anticipated risks to WFD compliance associated with the proposed scheme. There is also a risk of mobilisation of contaminants from sediment which requires further assessment at gate 4.

4.2.4.4 The WFD assessment will be reviewed at a later design stage for the EIA, which is a requirement of the DCO submission to provide assurance that the developed scheme complies with the WFD.

4.3 Habitats Regulations Assessment (HRA)

4.3.1 Context

4.3.1.1 The HRA assesses the impact on Habitats Sites, including Special Areas of Conservation (SAC), candidate SACs, Special Protection Areas (SPA), potential SPAs, compensation sites and Ramsar sites. Collectively, the Habitats Sites of England and Wales (including inshore sites to 12 nautical miles) are designated as the 'national sites network'.

4.3.1.2 There are no relevant candidate SACs, compensation sites, or potential SPAs related to the GUC SRO. A separate HRA has been produced for Minworth SRO, and forms part of its gate 3 submission.

4.3.1.3 The HRA to support this gate 3 submission builds on the HRA completed for gate 2. It does not revisit potential impacts that have already been discounted in consultation with the NAU, unless there are changes that could alter outcomes.

4.3.1.4 The HRA undertakes a screening of likely significant effects (LSEs) to allow for the assessment of deliverability. The rationale for the gate 3 assessment is justified following consideration of the potential impacts of the proposed GUC SRO, which are summarised in Table 4.1.

Table 4.1. Potential impacts and pathways

Potential impact	Impact pathway	Rationale for assessment
Increased water levels in the GUC	No impact pathway; no Habitats Sites are hydrologically connected to the GUC.	No further assessment.
Construction impact (increase to bank levels of canal, introduction of pumping stations, etc.)	Atmospheric pollution (Nitrogen deposition).	Increase in traffic during construction phase (materials and workers) has the potential to impact nitrogen deposition.

4.3.2 Approach

4.3.2.1 The UK left the European Union (EU) on 31 January 2020 under the terms set out in the EU (Withdrawal Agreement) Act 2020. While the UK is no longer a member of the EU, a requirement for HRA will continue, as set out in the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.

4.3.2.2 The HRA process applies the precautionary principle to Habitats Sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the European site(s) in question. To ascertain whether or not site integrity will be affected, an appropriate assessment should be undertaken of the plan or project in question. Plans and projects that are associated with potential adverse impacts on Habitats Sites may still be permitted if there are no reasonable alternatives and there are imperative reasons of overriding public interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary.

4.3.2.3 The HRA approach follows the European Commission (2021) current guidance. To do this, evidence will be gathered, collecting information on relevant Habitats Sites and their conservation objectives and characteristics, as well as other plans or projects. The staged HRA process will then be carried out, as follows:

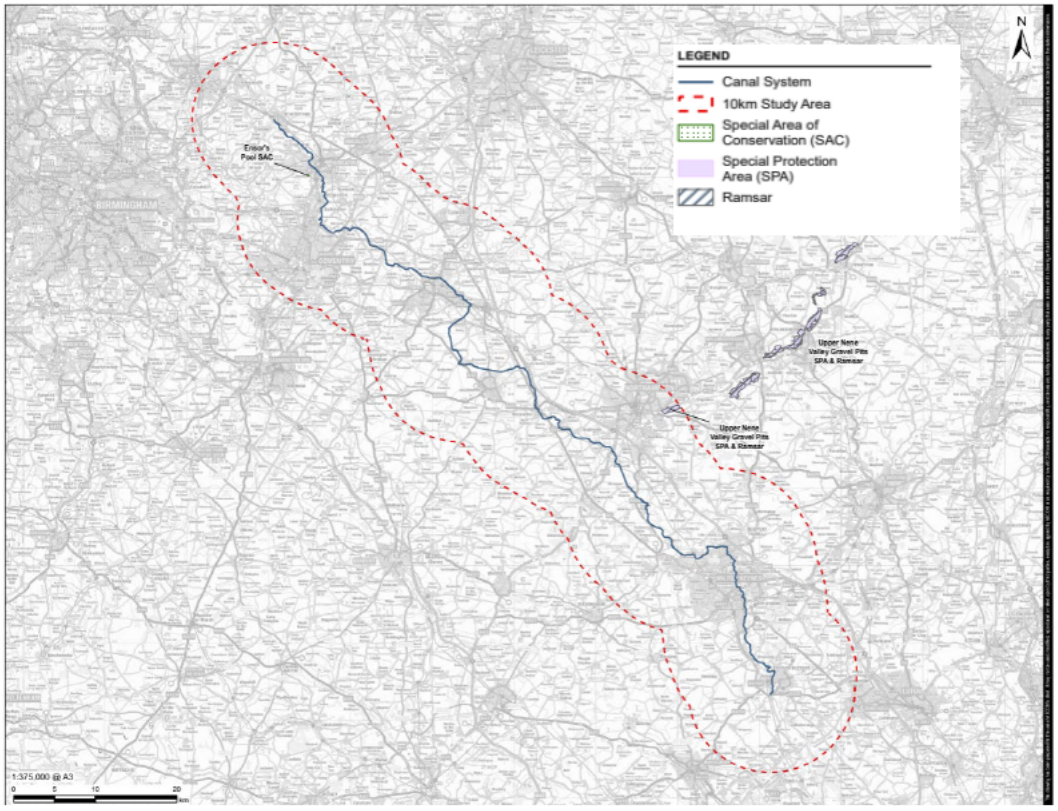
- Stage 1: Screening for LSEs.
- Stage 2: Appropriate assessment of LSEs on the integrity of the site and its conservation objectives, and consideration of ways to avoid or reduce (mitigate) any potential for an adverse effect on the integrity of the site.
- Stage 3: Where there remains an adverse effect on the integrity of the site, a derogation (exemption) can be sought, provided that three legal tests are passed in sequence: no feasible alternatives, IROPI, and securing of compensatory measures.

4.3.2.4 Before attempting Stage 3 derogation, the plan should be altered until adverse effects are cancelled out fully. These stages are iterative, being revisited as necessary in response to further information, recommendations and any relevant changes to the plan or project.

4.3.2.5 The Habitats Sites judged to have potential impact pathways present are shown in Figure 4.1 and are as follows:

- Upper Nene Valley Gravel Pits SPA/Ramsar
- Chiltern Beechwoods SAC
- Ensor's Pool SAC

Figure 4.1. Map showing Habitats Sites alongside canal route and buffer zone



4.3.3 Screening for likely significant effects (LSEs)

4.3.3.1 Initial screening of threats and pressures for the Upper Nene Valley Gravel Pits SPA/Ramsar identified that the GUC SRO will not impact upon the following, and they can therefore be dismissed from further consideration:

- Public access / disturbance
- Planning permission: general
- Fisheries: Freshwater
- Change in land management

4.3.3.2 Initial screening of threats and pressures for the Chilterns Beechwoods SAC identified that the SRO will not impact upon the following, and they can therefore be dismissed from further consideration:

- Forestry and woodland management
- Deer
- Change in species distribution

- Invasive species
- Disease
- Public access / disturbance

4.3.3.3 Initial screening of threats and pressures for the Ensor's Pool SAC identified that the SRO will not impact upon the following, and they can therefore be dismissed from further consideration:

- Changes in species distribution
- Recreational pressure

4.3.3.4 The studies have identified the following risk areas:

- Hydrological connectivity
- Habitat degradation
- Waterbody deterioration

4.3.3.5 Hydrological connectivity was identified as potentially being impacted further by the GUC SRO at both the Upper Nene Valley Gravel Pits SPA/Ramsar site, and for the Ensor's Pool SAC. The main risks associated with the scheme are from the proposed new intakes, outfalls, abstractions, bypasses and bank raising, given they are likely to require in-channel construction works that could result in temporary habitat degradation. This may be via runoff from accidental pollution events, or dust emissions from construction activities.

4.3.3.6 Another risk is the potential that changes caused by the transfer could cause deterioration of the GUC and other waterbodies in hydraulic continuity with the GUC, although it is acknowledged that discharge standards for key substances or parameters would need to be agreed and that work within subsequent gates will progress this. The quality of highly treated recycled water from Minworth AWTP itself will be regulated by an environmental permit and is therefore not considered a risk to Habitats Sites associated with the scheme.

4.3.3.7 A final risk associated with the operation of the scheme is the potential for the new water input (Minworth SRO discharge to the canal) to result in temporary increases to surface water levels and flows resulting in water quality changes and alterations to hydrologic/hydraulic processes. Thus there is potential that changes could cause deterioration of the GUC and other waterbodies. It is acknowledged that discharge standards for key substances would need to be agreed with the EA within gate 4.

4.3.3.8 In respect to hydrological connectivity, the gate 2 waterbody connections report[6] established that whilst a connection exists between the GUC and the River Nene at Whitton Flood Paddle and Stow Flood Paddle, a sluice lockage and bypass flow system is in place which limits the overspill of water from the GUC. Similarly, changes in water quality will be minimised by Minworth AWTP, and the gate 3 hydraulic modelling indicates a maximum of 3cm increase in level at the Gayton Junction with the Northampton Arm of the GUC, which is well within the NOZ of the canals. Therefore, any impacts along this branch of the GUC are not considered significant, and there is no LSE resulting from hydrological connectivity on the Upper Nene Valley Gravel Pits SPA/Ramsar site. This impact pathway is therefore not put forward for appropriate assessment.

4.3.3.9 Finally, Ensor's Pool SAC is located immediately south-west of Nuneaton. It is an abandoned clay pit measuring 3.5ha with a perimeter of approximately 770m and an average depth of 8m. A previous dye tracing exercise of the pool by the EA has confirmed Ensor's Pool is groundwater fed and is not hydraulically linked to nearby ordinary

[6] GUC Gate 2 Annex B3.2.1 Watercourse Connections Report - Redacted

watercourses. Therefore, there is no LSE resulting from hydrological connectivity on the Ensor's Pool SAC, and this impact pathway is not put forward for appropriate assessment.

4.3.3.10 The assumptions made in the HRA are based on best-practice legal requirements and standard mitigation measures. Where there is a legal requirement which would negate otherwise potential effects, the effects are not considered further in this HRA. Mitigation of the issues listed above would therefore be in the form of following best-practice procedures and legal requirements. A list of the assumed mitigations is documented in Section 4.1 of Annex B3.16 (HRA Report).

4.3.4 In-combination effects

4.3.4.1 Minworth SRO and the final ST Drainage and Wastewater Management Plan 2023 (DWMP23) are projects and plans considered to have potential to act in combination with the GUC SRO. However, at the time of this assessment, no pathways have been identified that could result in an LSE alone. Given the absence of impact pathways, there is no potential for cumulative effects from this scheme. No further assessment is required at this stage, but it will be revisited during gate 4 to capture any new potential effects.

4.4 Environmental Impact Assessment (EIA)

4.4.1 During gate 3, the SRO partners have onboarded an expert EIA team to deliver the large EIA scoping exercise for GUC SRO. Initial Phase 1 surveys have been undertaken along the canal route (UK Hab Surveys) including the Daventry and Drayton Reservoirs, at two abstraction locations, three of the four sites for potential treatment and/or storage assets (one not possible as access not granted), and across several pipeline corridors. This is consistent with the non-statutory consultation materials.

4.4.2 The EIA scoping exercise is to support a DCO application for the Grand Union Canal Transfer (GUCT), which includes both Minworth SRO and GUC SRO. The GUC SRO component of the EIA crosses eight local authorities and over 550 land parcels.

4.4.3 The EIA scoping report is aligned to the following chapter structure:

- Introduction
- Legislation and Planning Policy Context
- Description of the Proposed Development
- Consideration of Alternatives
- Consultation
- EIA Approach and Methodology
- Other Assessments
- Agriculture & Soils
- Air Quality & Odour
- Climate
- Cultural Heritage
- Ecology – Aquatic
- Ecology – Terrestrial
- Ground Conditions
- Human Health
- Landscape & Visual Amenity
- Major Accidents and Disasters
- Noise & Vibration
- Socio-economics

- Traffic & Transport
- Waste & Materials
- Water Environmental & Flood Risk
- Structure of the Environmental Statement (ES)
- Summary

4.4.4 The EIA scoping report, submitted to the Planning Inspectorate (PINS), takes into account feedback from the non-statutory consultation, which took place from 11 September to 25 October 2024.

4.4.5 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (as amended) (EIA Regulations) require PINS to issue a scoping opinion within 42 days of receiving a request or from receipt of additional information where an applicant has provided insufficient information with their original request. Within this period, consultees have 28 days in which to provide comments on an applicant's scoping request.

4.4.6 The GUC SRO gate 3 submission date is aligned to the EIA scoping opinion. This is to ensure the EA has sufficient resourcing to respond to PINS formally, prior to engaging on the gate 3 submissions.

4.4.7 The remainder of the EIA process will be undertaken within gate 4.

4.5 National Parks, The Broads and Areas of Outstanding Natural Beauty EIA

4.5.1 GUC SRO does not impact any National Parks.

4.5.2 Since 2023, Areas of Outstanding Natural Beauty (AONBs) are called National Landscapes. The pipeline from the new WTW to AfW's service reservoir crosses the Chilterns National Landscape. The landscape character assessment for the National Landscape identifies four broad landscape character types (LCT): scarp foothills and vale fringes, chalk scarp, plateau and dip slope, and river valleys. The pipeline will transect all four of the LCTs in the north of the National Landscape.

4.5.3 The landscape fabric of the assumed pipeline corridors are predominately a sequence of agricultural fields bound by hedgerows and hedgerow trees. The corridors also pass through a series of hedgerows running adjacent to country lanes, some of which are mature, and others of which are gappy in nature. Other landscape features within the corridors include woodland and scrub planting.

4.5.4 It is considered that during construction, the proposals could temporarily affect the character of the National Landscape in localised areas, due to the introduction of construction vehicles, temporary compounds and welfare facilities and the temporary diversion or closure of public rights of way (PRoW). GUC SRO will look to mitigate these impacts (e.g. only allowing construction vehicles at certain times of day) at the earliest opportunity, and they will likely be short term in nature.

4.5.5 The main potential for effects on landscape character of the National Landscape during operation relate to the loss of vegetation. The majority of this can be reinstated, such as hedgerows and agricultural land, whereas woodland planting cannot be replaced and will be avoided where possible.

4.5.6 Due to the nature of the proposals and the reinstatement of vegetation, these are not likely to result in an inherent change to the existing landscape character of the National Landscape if the mitigation hierarchy (Figure 4.2) is adhered to.

4.6 Other environmental considerations

4.6.1 The RAPID gate 3 guidance references biodiversity net gain (BNG) and that it should support the net gain actions in the Government's 25-year Environment Plan, as well as meeting the requirements of the Environmental Act 2021 and national policy requirements/statements where relevant.

4.6.2 The GUC SRO's high-level BNG strategy aims to outline the drivers to deliver BNG, the scope of the BNG approach, and the constraints to delivery. A full BNG assessment of the GUCT will be completed to support the DCO submission in gate 4. The BNG strategy will be updated throughout gate 4 in order to capture developments and opportunities identified through design changes or non-statutory consultation.

4.6.3 Scope of BNG assessment

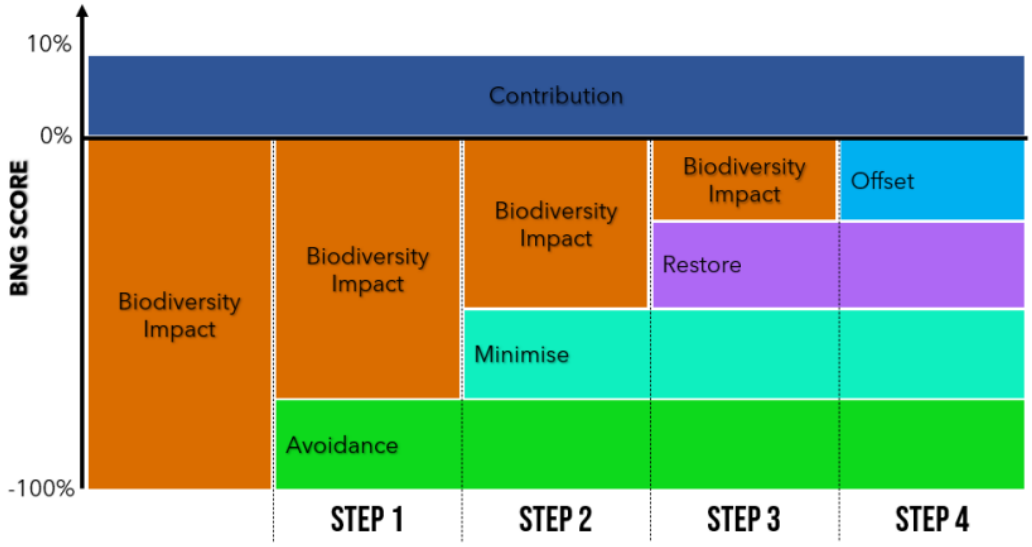
4.6.3.1 The BNG assessment involves making a comparison between the biodiversity value of existing habitats present within the DCO boundary prior to development ('baseline') and the predicted biodiversity value of habitats following the completion of the development ('post-development').

4.6.3.2 The comparison is made in terms of biodiversity units, with a biodiversity metric providing the mechanism to allow biodiversity values to be calculated and compared using Defra's Statutory Biodiversity Calculation tool. To claim a net gain in biodiversity, there must be an increase across all habitats, hedgerows and watercourse units. The units cannot be summed to give an overall biodiversity unit value, i.e. one cannot offset another.

4.6.4 Hierarchy of approach

4.6.4.1 During the final design stages in gate 4, ahead of the DCO submission, the BNG mitigation hierarchy set out in Figure 4.2 will be followed.

Figure 4.2. BNG mitigation hierarchy



4.6.4.2 The objective will be to achieve at least 10% BNG. The first priority is to avoid biodiversity impacts where practicable. Where biodiversity impacts cannot be avoided, they will be

minimised and, where necessary, offset through compensation. If biodiversity impact offsetting is required, it will be within the DCO limits (i.e. on-site) where possible. If on-site offsetting is not possible, off-site opportunities will be sought, either on partner-owned land or through consultation with stakeholders. As a last resort, biodiversity units or credits may be purchased through brokers or through NE.

4.6.4.3 Further information on the BNG approach is available in Annex A1 (Design Report).

4.6.5 BNG next steps

4.6.5.1 Baseline habitat information is being collected through field surveys, which have supported the EIA scoping submission to PINS, and will continue into gate 4. Following completion of these surveys, the following steps will be taken:

4.6.5.2 Habitats on-site will need to be categorised using the UK Habitat classification (required for the NE's Environmental Benefits from Nature tool).

- A strategic significance assessment for baseline habitats will be completed.
- The habitat condition assessment of the habitats will be quality assured.
- Once the above have been completed, they will be digitised to extract the data into a format that can be entered into the NE tool.

4.6.5.3 Following the initial BNG baseline assessment, a BNG design stage report will be completed for the GUCT. This is to demonstrate the current BNG position in relation to currently available design information, and potential areas for additional mitigation and/or offsetting. This baseline position and accompanying report will then form part of the DCO process.

4.6.5.4 A BNG working group will be set up to engage external stakeholders with the BNG assessment prior to DCO submission, and to facilitate opportunities for delivery of BNG.

5. Carbon

5.1 Approach to carbon management

5.1.1 ST and AfW have committed to achieving net zero operational emissions by 2030, and the Trust is planning to achieve net zero before 2050. In addition to managing operational emissions, the SRO partners recognise the need to work closely with the supply chain to reduce emissions as a result of GUC SRO.

5.1.2 Once a strategic decision has been made to select a project through the WRMP process, design decisions make the next most impactful contribution to reducing carbon and other greenhouse gas (GHG) emissions.

5.1.3 A comprehensive carbon management system (CMS), aligned to PAS 2080:2023 Carbon Management in Infrastructure and Built Environment[7], is being developed for the SRO. This approach meets key water industry and government policies[8], and ensures alignment with UK Government's ambition to be net zero carbon by 2050 and the water industry's target to achieve net zero operational emissions by 2030.

[7] PAS 2080:2023 Carbon Management in Infrastructure (bsigroup.com)
[8] The Paris Agreement (UNFCCC, Climate Change 2021); The Physical Science Basis (ipcc.ch); Committee on Climate Change 2023 Progress Report Government Response; Why Net Zero (www.gov.uk)

5.1.4 The primary objective of the CMS will be to provide a structured framework for capturing and managing whole-life carbon (WLC) emissions data. The CMS will span the GUC SRO's entire value chain and extend to every stage of project delivery, enabling the reporting and reduction of WLC emissions. It will enable the partners and the CAP to work with the supply chain to reduce WLC emissions and delivery costs, whilst encouraging the adoption of low-carbon solutions.

5.1.5 Consideration of operational and embodied carbon has been embedded into best value planning, with carbon considered as a key criterion for option evaluation.

5.2 Assessments of the whole-life carbon (WLC) cost of the solution

5.2.1 Carbon emissions from the built environment are due to the asset operation (Scopes 1 and 2) and the embodied emissions from their construction (Scope 3). For the GUC SRO, operational emissions result from energy consumption in the day-to-day running of assets, while embodied emissions arise from the production, procurement, and installation of materials and components. These also include emissions from maintenance, repair, replacement, demolition, and disposal throughout the asset's lifecycle.

5.2.2 The UKWIR (2012) framework for accounting for embodied carbon in water industry assets has been followed.

5.2.3 In accordance with ACWG guidance[9], carbon emission 'hotspots' were identified in order to influence the design to reduce carbon. Emissions reduction will be prioritised over the use of offsets, in line with the Institute of Environmental Management and Assessment (IEMA) GHG Management Hierarchy[10].

5.2.4 The gate 3 focus has been on Scope 3 emissions (e.g. materials manufactured and supplied for construction and operational use carbon from electricity for pumping), as they represent the largest proportion of emissions from the scheme. The aim has been to identify opportunities for significant reduction of embodied and operational carbon.

5.3 Hotspot identification

5.3.1 Carbon estimation calculations have identified areas of medium and high carbon emission hotspots across the scheme, provided in Table 5.1.

Table 5.1. Carbon emission hotspots identified in the GUC SRO[11]

Activity	Hotspot	Key emissions sources	Whole life cycle (WLC) boundary[12]	Anticipated carbon impact
Pipeline construction	Manufacturing and transportation of pipeline materials, excavation, and installation	Steel or plastic pipes, concrete, aggregate	A1 - A5	High
Pumping stations	Energy consumption for installation and operation	Concrete, steel, electrical components	A1 - B7	High

[9] ACWG Carbon Ambition SRO low capital carbon alternatives
[10] IEMA Greenhouse Gas GHG Management Hierarchy
[11] Estimates of hotspot emissions are not provided; the hotspots are identified from the description of scheme components and options.
[12] BS EN 15978 lifecycle stages: Product Stage (A1-A3): Raw material supply, transport, and manufacturing. Construction Process Stage (A4-A5): Transport to the site and construction/installation processes. Use Stage (B1-B7): Use, maintenance, repair, replacement, refurbishment, operational energy use, and operational water use. End of Life Stage (C1-C4): Deconstruction, transport, waste processing, and disposal.

Activity	Hotspot	Key emissions sources	Whole life cycle (WLC) boundary[12]	Anticipated carbon impact
Water treatment	Energy and chemicals required for treating water	Chemicals, steel, concrete	A1 - B5	High
Access	Energy-intensive production and transportation of surfacing materials	Surfacing, stone	A1 - A5	Medium

5.3.2 Innovations that offer potential alternatives to reduce embodied and operational carbon are provided in Annex A (Design Report). These documents, and any amendments made to them, will be considered for specification in Invitation to Tender (ITT) Employers Requirements in the CAP tender documents.

5.4 Risk or uncertainties in carbon assessment

5.4.1 The carbon assessment conducted during gates 2 and 3 has used the WSP (AfW's engineering consultant) carbon tool. This has highlighted several risks and uncertainties that need to be managed as GUC SRO progresses to gate 4 and through the DCO planning process.

5.4.2 The key risks and uncertainties identified include:

- Limitations of the gate 2 carbon assessment: The carbon calculations at gates 2 and 3 were based on high-level designs without the benefit of a detailed bill of quantities. Consequently, the carbon assessments from the WSP tool lack the granularity needed to accurately pinpoint specific carbon hotspots.
- Lack of transparency and future decarbonisation: The WSP carbon tool presents limitations in terms of transparency and future planning. While tailored to the project, the tool is constrained by the high-level nature of the design inputs and a lack of transparency regarding the emission factors used. Similarly, it does not account for the UK Grid's future decarbonisation in its operational electricity assessments over the anticipated 71-year period. This could lead to an overestimation of electricity-related emissions, while underestimating the carbon impacts associated with other significant factors, such as chemical usage.

5.4.3 The following mitigation strategies are proposed for gate 4:

- Transition to detailed carbon reporting: As the project progresses to gate 4, carbon assessments will move from broad estimates to detailed analyses based on a comprehensive bill of quantities. This transition will enhance the precision of carbon hotspot identification, providing a stronger foundation for targeted mitigation measures.
- Updating emission factors: Updated emission factors will be integrated into the carbon tool. This update will ensure that carbon assessments reflect the most current and accurate data, leading to more reliable estimations of carbon impacts.
- Harmonisation of carbon tools: Moving forward, there will be a concerted effort to harmonise carbon calculations and reporting under a single, standardised tool. This alignment will reduce discrepancies and provide a clearer, more consistent understanding of carbon impacts, ensuring that all emissions sources, particularly those related to chemicals and operational electricity, are accurately assessed and effectively mitigated.

5.4.4 By addressing these identified risks and uncertainties at gate 4, GUC SRO will be better equipped to manage carbon impacts with greater precision and reliability. This proactive approach will ensure that carbon reduction efforts are aligned with government, project, corporate, and DCO requirements.

5.5 Carbon calculations

5.5.1 AfW's carbon calculator has been utilised to determine construction and operation carbon values for each component of the scheme. The carbon calculator is used to determine embodied and operational emissions from scheme components. GHG emissions are reported in tonnes of carbon dioxide equivalent (tCO_2e). Generic concept designs of scheme components have been measured to generate quantities, which have been used to establish scheme carbon estimates.

5.5.2 In gate 4, once the preferred scheme has been fully identified, detailed ground investigations, topographical surveys and EIAs will be carried out so that carbon calculations can be further refined and uncertainties addressed. These uncertainties include:

- Ground conditions: These will influence suitable material choices, extent of temporary works, extent of ground remediation (if any), foundation size, structural loading, etc. The feedback from the non-statutory consultation conducted in gate 3 will help refine the ground investigation requirements and will enable rapid investigations.
- Site location and environmental: This will influence access length and type of access and potential remediation, compensation or BNG work to be carried out.
- Site selection and agreed land availability: This will influence bankside storage and WTW construction volumes (e.g. excavated and imported material volumes).
- Pipeline route selection: This will influence construction material volumes (e.g. pipeline depth, length, etc.), the proportion of open-cut to trenchless construction methods, and topographical impacts (e.g. pumping heads, support/thrust restrain, slope stability, etc.).
- Procurement strategy: A carbon strategy is being developed.
- Operating strategy: This will impact on canal bank and storage requirements.

5.5.3 The GUC SRO carbon summary is given in Table 5.2. Carbon costs in £/kgCO2e will be developed at gate 4, once a carbon strategy and procurement/construction strategy have been confirmed, and final sites selected.

Table 5.2. Gate 3 carbon estimate summary

Component	Construction (tCO_2e)	Replacement (tCO_2e)	Operation (tCO_2e)	Whole life (tCO_2e)
Discharge	1,939	1,463	0	3,402
Canal	37,563	38,115	310	75,989
Abstraction	1,554	1,199	266	3,019
Water storage	23,026	6,861	1,711	31,598
Treatment	71,810	236,585	954,405	1,262,800
Distribution	12,467	3,058	2,423	17,947
Total	**148,359**	**287,281**	**959,115**	**1,394,755**

5.5.4 The main differences from the gate 2 submission can be summarised as:

- Canal bank raising lengths have increased between gate 2 and gate 3 as a result of modelling undertaken. It is expected that this increase will be reversed in gate 4, given the SRO's desire to minimise the amount of bank raising. This will reduce the impact of carbon and cost, and reduce disruption to the environment and local stakeholders.
- Storage now includes the Daventry and Drayton Reservoirs, which also involves pumping up into reservoirs and has therefore increased operational carbon.
- Gate 2 storage post abstraction was in an area of historic sand extraction (quarry) and subsequent unknown landfill use. The carbon estimate therefore included significant allowance for disposal of potentially contaminated material, land remediation, and import of clean material for embankment construction. The current sites do not have these issues, and therefore have a much-reduced construction carbon estimate.
- Sites being considered at gate 3 have negligible elevation difference between abstraction and storage.
- The WTW design has been developed based on a flat generic site layout. This requires interstage pumping, whereas the gate 2 design layout followed the land contours. The operating carbon is dominated by chemical use; therefore, although the construction and replacement carbon has increased (i.e. more pumps and process units to construct and replace), the reduction in chemical use means that the overall WLC is similar.
- Uncertainty in carbon estimates has been accounted for as appropriate for the current stage of option design.

6. Programme and planning

6.1 Project plan

6.1.1 The WRSE Regional Plan has selected the GUC SRO to help meet the DO requirements of the region by 2032. The preferred strategic resource strategy of the AfW WRMP24 includes the development of the GUC SRO to deliver water into supply for AfW customers in 2032.

6.1.2 Solution-specific milestones

6.1.2.1 The project plan is shaped by the planning consent route. The SoS has determined that the scheme should be treated as a development for which development consent is required through issue of a direction under s.35 of the Planning Act 2008 due to its complexity and substantial infrastructure works, and the need for multiple powers and consents. Therefore, the project must obtain development consent under a DCO. The submission of the DCO application is expected in Q4 of 2026, with the determination of the DCO application expected in Q2 2028.

6.1.2.2 The launch date for the DPC is another key driver with regard to ensuring the GUC SRO is operational during 2032. It is expected that there will be much stronger bidding interest for a project once the outcome of the DCO application has been determined, owing to the reduced uncertainty.

6.1.2.3 The GUC SRO programme does not allow the DCO to be determined before key components of the DPC approach need to begin. The project team has been liaising with Ofwat and has undertaken some initial market engagement (Section 7.4) to explore options. The current strategy is to stagger the processes, allowing the DCO to proceed as scheduled. Meanwhile, early elements of the DPC process will begin before the formal

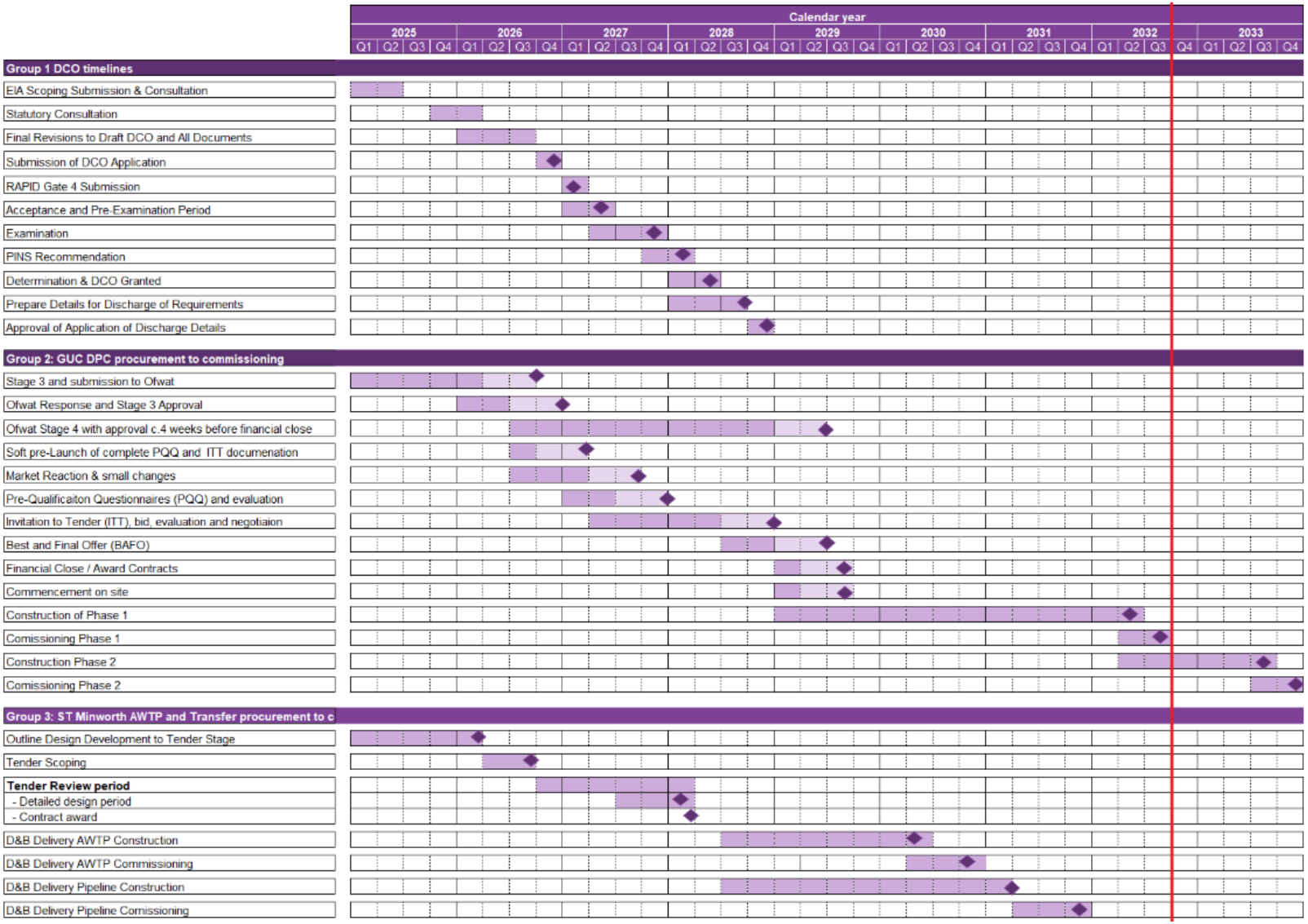
determination of the DCO. The risk is further mitigated because this stage of the DPC will primarily involve the Pre-Qualification Questionnaire (PQQ) stage, which is a factual assessment of bidders' capabilities.

6.1.2.4 Key changes to the project plan since gate 2 are summarised below:

- The DCO and gate 4 submission has been delayed by approximately 18 months to allow more time for non-statutory consultation and refinement of the project's design and location prior to statutory consultation.
- DPC financial close has been moved from shortly after DCO submission to nine months after DCO submission. This is because much stronger tendering competition is expected once the outcome of the DCO application can be predicted.

6.1.2.5 Key solution-specific milestones that need to be undertaken and achieved prior to gate 4 and financial close are summarised in Figure 6.1.

Figure 6.1. High-level project timeline



6.1.2.6 The phasing of key activities to achieve these milestones is summarised in Table 6.1.

Table 6.1. Phasing of key activities and decisions

Milestone	Key activity	Start date	Decision/outcome required
DPC stage 2 report	DPC stage 2 submission to Ofwat	Q4 2024	Ofwat acceptance of stage 1 and stage 2 submissions
EIA scoping opinion	Submit EIA scoping request to PINS	Q1 2025	Receipt of EIA scoping opinion from PINS
Gate 3 submission	Submit to RAPID	Q2 2025	RAPID gate 3 approval (draft and final decision)
PEIR	Finalise Preliminary Environmental Information Report (PEIR)	Q3 2025	Client approval of PEIR and statutory consultation materials
Statutory consultation	Formal consultation with all statutory consultees	Q4 2025	Consultation outcomes report
DCO Application	Collate and submit application documentation, complete forms, compile application	Q4 2026	Acceptance and pre-application period
Gate 4 submission	Submit to RAPID	Q1 2027	RAPID gate 4 approval
DPC process (PQQ)	Issue of PQQ documents and subsequent prequalification evaluation	Q1 2027	Select bidders
DPC process (ITT)	Issue of ITT documents and subsequent tender evaluation	Q2 2027	Identification of preferred bidder and financial close
Application of discharge details	Submit detail of how it is intended to meet the DCO conditions	Q4 2028	Approval of application

6.1.2.7 The GUC SRO and Minworth SRO will align critical path activities to enable timely delivery of the project.

6.1.3 Construction programme

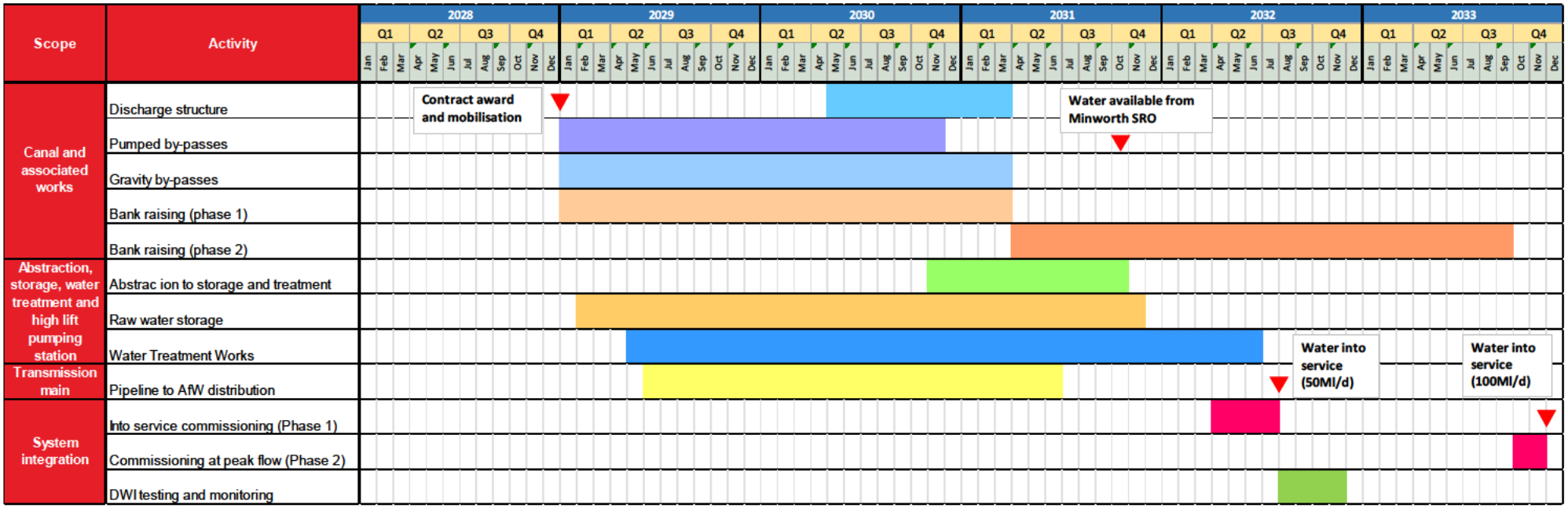
6.1.3.1 The estimated construction timeline for the scheme is 43 months for water to be delivered into supply. The planned construction start date is Q1 2029 following financial close on the DPC, with up to 100Ml/d DO from 2033.

6.1.3.2 The AfW WRMP24 makes reference to a reverse trade to Anglian Water in 2032/33, and that in order to facilitate this, the first 50Ml/d of GUC is required to be delivered. The SRO partners are exploring ways in which part of the scheme could be delivered earlier than the full 100Ml/d from 2033.

6.1.3.3 The Minworth SRO project plan shows that water can be delivered to the GUC SRO in Q4 2031 to aid the commissioning and testing of GUC SRO. Flow commissioning will need to be sequential, from Minworth WwRC at the start of the scheme to the pipeline transferring treated water to AfW customers.

6.1.3.4 The envisaged construction programme from financial close, through construction and commissioning to the phasing of water into supply, is shown in Figure 6.2.

Figure 6.2. Illustrative construction programme



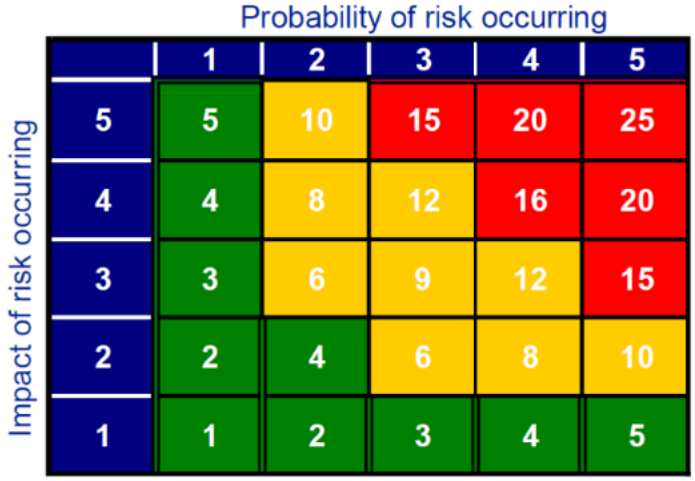
6.1.3.5 The construction programme includes a mobilisation and site establishment phase, and completion of sufficient design to start construction on critical path activities. The canal bank raising is expected to be the key critical path component to project completion, requiring careful planning to align with environmental and canal closure restrictions.

6.1.3.6 Managing the logistics of material supply for the bank raising, along with temporary works to facilitate construction, will be complex. Early detailed planning will be essential for procuring long lead items such as large valves, motor control centres (MCCs), power supplies, specialist process units, and large diameter pipes. Early contractor involvement (ECI) engagement has been mobilised to further mitigate construction risks.

6.2 Key risks and mitigation measures

6.2.1 The risk scoring referenced in this section is completed based on the definitions given in Figure 6.3.

Figure 6.3. Risk score matrix



6.2.2 A summary of the highest scoring risks to the project is shown in Table 6.2. The final costs of the SRO are dependent upon the mitigation / materialisation of these risks.

Table 6.2. Key risks and mitigation plans

Ref	Name	Details	Risk score	Mitigation plan	Mitigated risk score
G3-GUC-R015	Uncertainty over regulatory position for emerging contaminants	RAPID guidance requires details of proposed mitigation for any emerging contaminants identified.	20	AWTP to provide treatment to ensure no deterioration. Additional WTW upon abstraction.	5
G3-GUC-R012	Lack of timely decisions by regulators	If decisions are not made, the scheme could be delayed or become inefficient for customers e.g. discharge standards (Minworth SRO).	20	Regular engagement with regulators to communicate this key risk. Mitigation opportunities are limited.	15
G3-GUC-R031	Unknown complexities in design	Could lead to increased scheme complexity, cost and potential delays. Unknown	16	ACWG optimism bias (OB) methodology applied to account for unknown costs.	6

Ref	Name	Details	Risk score	Mitigation plan	Mitigated risk score
		complexities driven by lack of access to sites pre-consultation.		Aim to engage with key landowners to ensure prompt site access.	
G3-GUC-R029	Land acquisition	Current unknowns regarding landowner willingness to support voluntary acquisition, or if compulsory acquisition is to be required.	15	Prompt and frequent engagement with landowners of selected site, post non-statutory consultation. Potential use of powers of compulsory acquisition in the DCO.	12
G3-GUC-R047	Seasonal ecological survey	Risk that programmed surveys are missed due to delay in design freeze, lack of a project decision, or by poor weather.	15	Ensure design freeze is well understood and supported by tight decision-making process.	9
G3-GUC-R044	Landowner challenges	Difficulties gaining access to land for surveys or construction could delay the programme.	15	Progress with early engagement. Ensure thorough consultation events. Consideration of stop locks to replace embankment raising in sensitive areas. Fallback of statutory powers of entry for survey.	12
G3-GUC-R0006	DWI concerns with DPC	DPC opens the door to non-water companies owning and operating treatment assets. DWI would therefore have no statutory powers on such organisations.	15	Ofwat and DWI sought counsel advice on the issue and have jointly been working on a contractual and licence solution to this issue. They anticipate being in a position to brief affected companies on their proposal for resolving this issue in early 2025.	5
G3-GUC-R010	Minworth D&B	Should Minworth SRO be constructed via Design & Build (D&B), and GUC SRO via a CAP (DPC), there is a risk that programme misalignment could occur.	15	Ensure parties are in close dialogue with one another. Minworth SRO delivery must come before GUC SRO to ensure commissioning.	9
G3-GUC-R026	Canal velocity	Increases in canal velocity could risk navigation and/or ecology.	12	Extensive system modelling, ‘real world’ testing on existing canal transfer, field surveys.	6
G3-GUC-R050	Condition of existing canal assets	There are a significant number of aged assets on the canal system. The Trust’s maintenance and inspection regime is responsive, rather than proactive.	10	Identification of areas where assets are in poorer condition. Undertaking asset condition assessments. Carrying out remediation if required.	6

Ref	Name	Details	Risk score	Mitigation plan	Mitigated risk score
G3-GUC-R008	DPC market interest	Whilst GUC meets the thresholds for DPC, and initial engagement was relatively positive, there is a risk of limited or no interest from bidders.	9	Continued market engagement to identify risks, concerns and areas of lower confidence. Use insight to drive early works to improve confidence.	6
G3-GUC-R013	Pollution events (in canal)	Canals are open, multifunctional assets that may be liable to pollution events. Risk exists with or without transfer. Risk classified according to EA categories 1 (most serious) to 4 (little or no impact).	9	Scheme design to incorporate storage along the route and post abstraction to enhance resilience in the event of a supply interruption.	6

6.2.3 Regulatory barriers

6.2.3.1 The highest scoring risk relating to regulatory barriers is the current uncertainty around required parameter concentration in the Minworth SRO discharge (G3-GUC-R012) and consenting requirements for discharge and abstraction from and within the canal network. The SRO partners continue to liaise with the EA and National Appraisal Unit (NAU) on this matter, and have raised it with Ofwat given potential implications for investor appetite.

6.3 Key dependencies and assumptions

6.3.1 The need identified by the WRSE Regional Plan means that the scheme DO must be available in 2032, and the RAPID guidance states it must be construction ready in AMP8 (i.e. April 2025 to March 2030). The GUC SRO is on schedule to be construction ready by Q1 2029 (March) and able to deliver up to 100Ml/d DO from 2033. .

6.3.2 The timing of the GUC SRO programme and key activities are based upon a number of critical dependencies and assumptions, outlined in Table 6.3 and Table 6.4.

Table 6.3. Dependencies

Dependency	Commentary
Ofwat acceptance of stage 1 and stage 2 submissions by May 2025	RAPID requirement is that by gate 3 companies are expected to have provided DPC stage 1 and stage 2 submissions which have been accepted by Ofwat. Stage 2 was submitted on 29 November 2024, allowing a six-month period for Ofwat acceptance. Initial feedback was received in January 2025 from Ofwat on the stage 2 submission.
Approval of abstraction and discharge consents to the canal at Atherstone and/or to Daventry and Drayton Reservoirs from the canal at the southern end of the canal transfer	These fundamental consents will be obtained from the EA and separately from the DCO; however, approvals in principle will be sought prior to DCO application. It is currently programmed that these consents will be obtained before the end of Q2 2028. It is therefore required that there will be no delay in approval or imposition of conditions which impact on the scheme's ability to deliver the required DO.

Table 6.4. Assumptions

Assumption	Commentary
Work in gate 4	Early start gate 4 work will commence during the gate 3 period, as soon as this has been agreed with RAPID.
Timely completion of Minworth SRO	The GUC SRO is dependent upon Minworth SRO for supply. It is therefore assumed that the Minworth SRO will be completed in time to meet GUC SRO commissioning requirements.
Limitation of the DCO	All components of the GUC SRO and Minworth SRO will be included in the GUCT DCO, as the principal or associated development.
DCO timeline	A timeline from DCO submission up to DCO award is expected to be 18 months. No allowance is currently made for a period of judicial review as it is likely to fit into this 18-month period.
Minimum flow	A minimum flow of 23Ml/d will be required for maintenance of stable treatment processes at the Minworth AWTP.
Contractual arrangements for construction	The current position is: • Minworth SRO (Minworth AWTP, pumping station and pipeline to Atherstone) – Refer to Minworth SRO gate 3 submission. • Canal assets – Design, Build & Finance (DBF). The Trust will operate and maintain all the assets built along the canal, given its expertise and statutory duty to maintain canal assets. • Abstraction, Storage, Treatment and Pipeline – All the new AfW assets from the WTW at the southern end of the canal transfer to an underground reservoir near Luton have the potential to be implemented under a Design, Build, Finance, Operate & Maintain (DBFOM) model, pending regulatory, financial and operational acceptability. This structure will be further considered as a result of market engagement with selected potential bidders and their partners through the DPC process.
DPC timeline	24 months assumed, from prequalification to financial close.
Interaction between procurement and planning processes	The DPC launch date is crucial for achieving GUC SRO operation by 2032. Once the DCO outcome is known, stronger tendering competition is expected. Although the DCO cannot be fully determined before DPC, the staggered DPC process is currently planned toward the end of DCO determination. The timing will be determined through market testing and Ofwat approval during DPC stage approvals.

6.4 Proposed gate 4 activities and outcomes

6.4.1 Proposed dates for critical gate 4 activities are outlined in Table 6.5. These activities align with the GUC SRO project plan. This is not intended to be an exhaustive list of all work to be undertaken in gate 4 (Q2 2025 to Q4 2026) and includes ‘early start’ items (Autumn/Winter 2024 and early 2025).

Table 6.5. Proposed gate 4 activities and outcomes

Activity	Gated period	Period
Determine work packages for early start gate 4, scope and procure	Gate 4 (early start)	Winter 24
Progress solution design to a level sufficient for statutory consultation.	Gate 4 (early start) and gate 4	Winter 24 – Summer 25
Topographical and geotechnical surveys	Gate 4 (early start)	Winter 24 – Summer 25
Design testing through digital twin – modelling software platforms	Gate 4 (early start)	Throughout
Land referencing, planning for land acquisition and easement agreements	Gate 4 (early start)	Winter 24 – Summer 25
Collect survey data for EIA	Gate 4 (early start)	Summer 24 – Autumn 25
Water quality monitoring	Gate 4 (early start)	Throughout
Progress solution design to a level sufficient for DCO application	Gate 4	Spring 25 – Autumn 26
Legal review (at key submission/consultation phases)	Gate 4	Throughout
Statutory consultation	Gate 4	Late 2025 / early 2026
Prepare DCO application	Gate 4	Spring 25 – Winter 2026
Submit DCO application	Gate 4	Winter 2026
Assurance	Gate 4	Autumn 2026
Board sign-off (at key submission phases)	Gate 4	Throughout
Gate 4 submission	Gate 4	Early 2027
Liaison with EA and NE via NAU	Throughout	Throughout
Ongoing engagement with relevant local authorities and prescribed consultees	Gate 4	Throughout
Liaison for Minworth SRO (progress in parallel)	Throughout	Throughout

6.5 Planning and land

6.5.1 Planning

6.5.1.1 The GUC SRO is reliant on the Minworth SRO for supply. As a consequence, there is a direct and fundamental relationship between the SROs. A decision was therefore taken to prepare a combined planning and consent strategy for the SROs as the Grand Union Canal Transfer (GUCT).

6.5.1.2 The project's consenting strategy remains as was the case at gate 2, which is to gain planning consent by DCO .

6.5.1.3 The GUCT was examined against the Nationally Significant Infrastructure Project (NSIP) qualifying criteria in section 28 of the Planning Act 2008. It was concluded that the project may not meet the annual average output threshold, owing to uncertainties over the interpretation of the definition of deployable output (DO). The GUC SRO partners determined that there was a clear case for the project being of national significance, in terms of the scale of development proposed and the geographic area it is located within, the urgent need for the additional water resources, and the economic and social benefits of securing resilient supplies for customers, including planned new housing development. On this basis, section 35 (s.35) of the Planning Act 2008 was followed, and the SoS confirmed the development should be consenting by way of DCO.

6.5.1.4 The project team has been liaising with Defra over Spring/Summer 2024, and a draft s.35 was submitted in May 2024. Liaison continued and minor feedback was received from Defra in August 2024, where additional detail was requested in terms of the number of customers to be supported by the GUCT. The final s.35 was submitted to Defra in September 2024 and an s.35 direction was issue in October 2024.

6.5.1.5 The following key activities have already been completed:

- An s.35 direction has been sought and obtained from the SoS.
- The pre-application stage of the DCO has commenced with PINS.
- DCO pre-application engagement has commenced with the Local Planning Authorities (LPAs) and prescribed consultees.
- Non-statutory consultation on the project has been completed.
- Introductory briefings and technical working groups have been conducted with stakeholders to inform the project's development. The feedback from these sessions has influenced the planning strategy and scheme presented for non-statutory consultation.

6.5.1.6 The DCO process enables land acquisition, along with many other consents and powers, to be dealt with at the same time. The DCO application may need to be supplemented by other applications for the following reasons:

- Some specific consent cannot be obtained in the DCO.
- A consenting authority may decline to allow a consent to be obtained through the DCO.
- It is not desirable, or it is inappropriate to include a consent within the DCO due to the stage of design development and the level of detail available.

6.5.1.7 Annex C1.3 (Planning and Consents Strategy Report) outlines the various secondary licenses and consents that may be necessary for the GUCT.

6.5.2 Land

6.5.2.1 The DCO will seek authorisation for the compulsory acquisition (CA) of land and/or rights related to land for the new WTW, storage, canal assets and the pipeline transfers. Whilst these rights will be included within the DCO application, the CA powers are not proposed to be exercised on parties who enter into voluntary rights. The approach to land rights acquisition for the project prioritises voluntary acquisition wherever practicable.

6.5.2.2 Applicants must justify their CA proposals to the SoS, demonstrating that the public benefit outweighs private loss and that all reasonable alternatives to CA have been explored. The SoS must be convinced that the purposes of CA are legitimate and justify interfering with the human rights of those affected.

6.5.2.3 Land referencing is required to identify all affected land and interested parties. Initial desktop referencing has been undertaken to support the relevant surveys for EIA scoping, and formal contact referencing will occur post-design freeze prior to statutory consultation. This will involve questionnaires to title holders to confirm ownership and provide contact details. Each title will be reviewed for restrictions or covenants, such as easements and mortgages, to facilitate formal consultation in accordance with the Planning Act 2008. Additional investigation will determine ownership of unregistered land.

6.5.2.4 Land referencing must precede survey access to arrange entry with landowners and occupiers, covering a broader area than required for construction. The project will secure rights for non-intrusive surveys via voluntary agreements, with statutory powers available if necessary. For intrusive surveys, such as ground investigations, the project will first seek licence agreements with landowners. If an agreement cannot be reached, statutory powers of entry will be used.

6.5.2.5 Detailed discussions post-consultation and post-design freeze will consider landowner constraints and reduce the risk of new issues during the statutory consultation. Special Category Land, including National Trust land, requires careful review due to it holding significant public interest and value. Engagement with key landowner groups, such as Crown/Special Category Land and land requiring freehold acquisition, will occur before statutory consultation. Prior to statutory consultation, engagement will have taken place with all landowners/occupiers.

6.5.2.6 The acquisition of land rights will include freehold acquisition for long-term infrastructure like the WTW, identified through a Legal Property Review. Permanent rights, such as easements, will be secured when full ownership is not needed, allowing for the construction, use, maintenance, and access of pipelines while minimising the burden on affected parties. Temporary rights for construction support and equipment storage will be acquired through voluntary agreements, with option agreements potentially reducing objections by securing necessary rights in advance. Essential mitigation land, such as for environmental or flood compensation, can be acquired through CA powers if justified, while broader public benefits usually require voluntary acquisition unless legally mandated.

6.5.2.7 Negotiations for easement and land purchase options will begin before the DCO application submission to PINS. Heads of terms and option plans will be issued to landowners after statutory consultation feedback but before DCO submission, with follow-up letters and meetings to explain terms. Negotiations will continue post-DCO submission and throughout the examination period to minimise incomplete land option agreements.

6.5.2.8 At this stage of the project, it is not feasible to provide a detailed breakdown of the estimated costs for acquiring land rights and compensation; however, full compliance will be ensured against the relevant updated guidance on power of compulsion. Payments for acquired rights will follow a Payment Schedule for New Rights, which is to be produced to ensure that the acquisition process is conducted fairly, transparently, and in accordance with legal requirements.

7. Procurement and operation model

7.1 Overview

7.1.1 GUC SRO will be procured through DPC. By gate 3, RAPID expects SRO partners to have submitted, and had accepted by Ofwat, the DPC stage 1 and 2 submissions, unless stage 1 has already been submitted and accepted by Ofwat in gate 2.

7.1.2 This section relates to the GUC SRO only. The Minworth SRO procurement and operating model is discussed in the Minworth SRO gate 3 submission. Although Minworth will now not be procured via DPC, a joint DCO application is still being pursued.

7.2 Stage 1

7.2.1 Ofwat published a revision to the DPC guidance slightly ahead of the GUC SRO gate 2 submission. A decision was made to revisit the DPC stage 1 report and update it where necessary. This was an extremely useful exercise, and the revised stage 1 report was submitted to Ofwat on 27 February 2024.

7.2.2 The position in the revised stage 1 report was that the GUC SRO should continue to follow the DPC route for procurement of the scheme. The assets associated with the GUC SRO will be split into two categories: canal assets, and abstraction, storage, treatment and pipeline.

7.2.3 The assumption relating to the proposed offer to market is that it will be aligned to the current DPC guidance, which allows for flexibility within the delivery model. The proposal at the revised stage 1 was for the delivery model to reflect Design, Build & Finance (DBF) for canal assets, because it is assumed that the existing operator (the Trust) will continue to operate and maintain the full canal system. The use of existing assets along the canal route is one of the major benefits of GUC SRO.

7.2.4 The assumption is that the proposed offer to market for the remainder of the assets will be a full Design, Build, Finance, Operate & Maintain (DBFOM) model.

7.2.5 The combination of the canal assets, and abstractions, storage, treatment and pipeline, met two of Ofwat's three tests set out in its DPC guidance (2023), namely for:

- Scalability (>£200m).
- Construction Risk (this can be transferred to a CAP to build).

7.2.6 The final test relates to operation and maintenance. The canal assets do not meet this test, but the remaining assets post abstraction clearly would, under the DBFOM model.

7.2.7 The SRO partners and Ofwat have maintained regular monthly engagement throughout gate 3 across the development and submission of this stage 1 report, and the development of the stage 2 report. The engagement has taken the form of briefings and/or workshops, enabling a shared understanding of the proposals and agreements.

7.2.8 In March 2024, Ofwat confirmed that it had concluded its review of the revised stage 1 report, alongside further evidence provided. As the project had already been assessed through the RAPID process, there was no formal requirement for a stage 1 report; however, Ofwat provided valuable feedback, and agreed that the project should continue to progress

the scheme through DPC. Ofwat advised that it considers the assurance requirements to have been met for the purposes of the stage 1 DPC report.

7.2.9 The SRO partners and Ofwat agreed to continue to work together throughout stage 3, addressing several aspects flagged as requiring further consideration.

7.3 Stage 2

7.3.1 As per the gate 3 guidance, RAPID does not require the information submitted in the DPC submissions to be resubmitted as part of the gate 3 report, unless there are significant changes between the achievement of the previous DPC submission and the RAPID gate 3 submission. In this case, companies must provide a summary of these changes and their driver(s), as well as an overview of the revised commercial structure and risk allocation.

7.3.2 RAPID expects companies to have submitted, and had accepted by Ofwat, the DPC stage 1 and stage 2 submissions. GUC SRO has complied with this guidance, having received acceptance on the stage 2 submission from Ofwat on 11 March 2025.

7.3.3 The following items reflect changes since the stage 1 DPC submission in February 2024:

- The inclusion of Daventry and Drayton Reservoirs into the project scope to mitigate potential impacts relating to the implementation of the HoF restriction under certain conditions on the River Trent.
- Revisiting the abstraction location on the canal, and the siting of the raw water storage and new WTW.
- A revised programme to reflect findings from early market engagement, primarily around the acceptability of running the DCO process in parallel with the DPC process. There was overwhelming support to at least stagger the two to provide as much certainty to the bidders as possible.
- Revised cost information to reflect ongoing scheme development between RAPID gate 2 submission and gate 3 submission.

7.3.4 Other than these items listed above, the proposed tender approach for the GUC SRO has changed little since the stage 1 report. Through the stage 2 process, the SRO partners have been working to draft heads of terms for a BSA, a supply agreement for the Trust, a tripartite operational agreement, and a CAP contract for the GUC SRO DPC.

7.3.5 Draft heads of terms of these documents were provided to Ofwat and its partners in advance of the formal stage 2 submission, to allow for early insights to strengthen the submission.

7.3.6 Developing full details of the risk allocation (including customers, CAP and Appointee as appropriate), including proposed Appointee incentives, is an ongoing activity which will form part of the stage 3 deliverable, in line with the Ofwat DPC guidance.

7.4 Market engagement summary

7.4.1 To obtain insight and help the project team finalise the preferred procurement approach, several contractors, investors and debt-providers were approached, covering a mixture of European and UK-based organisations.

7.4.2 At this stage of the project, direct one-to-one discussions provide the best opportunity for open dialogue and feedback. This will be supplemented with collective ‘market day’ sessions

and further one-to-one engagement in the next phase of the project, in accordance with Ofwat's stage 3 guidance.

7.4.3 Using pre-set questions in eight key focus areas, the SRO partners gained valuable insight into the market's views on key items such as:

- DBF vs DBFOM, timelines, and when to commence DPC in accordance with DCO and planning applications.
- Output/outcome specifications vs defined design specifications.
- Scope for innovation and reducing whole-life costs.
- Value for money of large residual value bullet payments at the end of the concession.
- Appetite to lend and views on Ofwat's proposed risk allocation.

7.4.4 All of the parties interviewed confirmed interest in the project or components of the project, as would be expected given no formal requirement to sign up or step away, citing the following reasons:

- The scheme elements are large enough to be interesting and small enough to be manageable.
- The project is at the smaller end of some of the PR24 DPCs announced, which is seen as more manageable and appealing to many contractors and some financiers.
- The reuse of the canal, rather than building a pipeline, will reduce embodied carbon, thus scoring highly when environmental, social and governance (ESG) issues are considered.
- There are a mix of opportunities for innovation.

7.4.5 Valuable insights were gained in areas where risk could be reduced prior to formally commencing procurement. For example, the market identified potential difficulties in being able to price for canal condition uncertainty and risks of latent defects. In response, SRO partners will undertake appropriate asset condition assessments and will seek to de-scope the amount of bank modifications required (where feasible), to help reduce this particular risk and make the project more attractive to the market.

7.5 Next steps

7.5.1 GUC SRO will continue to follow the staged DPC process, as set out in the Ofwat DPC guidance, as well as focusing on specific recommendations proposed by Ofwat in its stage 2 acceptance letter. The requirements for stage 3 comprise the following:

- Confirmation the project has been developed in accordance with Ofwat's guidance.
- Developing the detailed payment mechanism.
- Developing full details of the commercial model and risk allocation.
- Confirmation of how the Appointee's approach addresses key legal and regulatory requirements.
- Developing full details of the value-for-money assessment.
- Confirmation of selected procurement strategy.
- Confirmation of timeline.
- Detailed approach to accounting treatment.
- Copy of the CAP agreement to be provided to bidders.
- Updated market engagement activities, including a developed forward programme of engagement activities and market engagement strategy.

8. Solution costs and benefits

8.1 Overview

8.1.1 This section outlines the costs and benefits of the proposed GUC SRO. The cost estimates used the ACWG methodology, and contain a standardised optimism bias (OB) that will reduce as costs become more accurate.

8.2 Best value and solution benefits

8.2.1 AfW worked collaboratively with WRSE during the development of its WRMP and utilised WRSE modelling through its assurance framework. AfW's final WRMP24 therefore reflects the WRSE Regional Plan.

8.2.2 The Regional Plan best value metrics include:

- Cost, as represented by Net Present Value (NPV).
- Carbon, including embodied and operational emissions.
- Environmental impact, as represented by strategic environmental assessment (SEA) benefit disbenefit, natural capital, and BNG.

8.2.3 Chapter 9 of AfW's WRMP24 details the best value plan and includes the development of the 100Ml/d GUC SRO transfer in its preferred water resource strategy.

8.2.4 In the AfW WRMP24, the preferred water resource strategy includes the development of the GUC SRO, to deliver a DO of up to 100Ml/d from 2033. The WRSE Regional Plan has selected the GUC SRO as a key part of the regional solution to support the DO requirements of the region.

8.2.5 Progressing with a 100Ml/d transfer earlier in the planning period than modelled in previous iterations of the WRSE plan also accords with the consultation responses, which supported the earlier delivery of the full 100Ml/d scheme.

8.3 Comparison of options

8.3.1 The scheme described in Section 2 includes sub-options at the southernmost end of the scheme for the location of bankside storage and WTW, and transfer pipeline to an underground reservoir near Luton. The options with greatest potential at non-statutory consultation are listed below.

- Site B (water storage and WTW)
- Site H (water storage and WTW)
- Site H (water storage) with Site P (WTW)

8.3.2 As part of this shortlisting process, it was determined that the site identified in gate 2 near Leighton Buzzard (Site F) was no longer suitable for the scheme, due to unsurmountable constraints identified through the evaluation and consultation process. Additional insight into the optioneering process followed will be made available following this Gate 3 submission.

8.3.3 The overall costs of construction and operation for the scheme, including each of the shortlisted options and costed options that have been discarded, are summarised in Table 8.1. The costs include modifications to the existing canal infrastructure, abstraction from the

GUC, storage, and treatment prior to distribution to customers. A further breakdown of the cost estimates is given in Annex A (Design Report).

Table 8.1. Comparison of estimated cost for shortlisted options (80-year operational period)[13]

	Gate 2	Gate 3 (shortlisted options)		
	Site F (discarded)	Site H	Site B	Sites H+P
CAPEX (£m)	[redacted]	[redacted]	[redacted]	[redacted]
OPEX (£m)	[redacted]	[redacted]	[redacted]	[redacted]
NPV (£m)	[redacted]	[redacted]	[redacted]	[redacted]

8.3.4 The gate 3 shortlisted options are similar in CAPEX and OPEX costs, within +5% of each other. With many of the component elements are common across options (e.g. bank raising, storage, water treatment, etc.), the differences present a trade-off between longer pipeline routes against longer canal transfer routes (i.e. more pumped bypasses).

8.3.5 The main change in CAPEX estimates from gate 2 is due to updating the price base from 2022 to 2024. In addition. the sizing of the discharge and bypass structures along the canal have increased, as well as the extent of bank raising required, following more detailed hydraulic modelling in gate 3.

8.3.6 OPEX cost variance from gate 2 is due to the difference in electricity cost rate use. At gate 2, an electricity cost rate of £[redacted]/MWh was used; this figure has been updated to £[redacted]/MWh for gate 3. In addition, pumping costs are included at gate 3 for diverting flows from the canal at Braunston and pumping into Daventry and Drayton Reservoirs.

8.3.7 In gate 3, risk allowances, both from an estimate of OB and from the risk register assessment, remain relatively high, reflecting the level of detail available.

8.3.8 At this stage of the project, the cost of environmental and water quality mitigations and scheme benefits are not included in cost estimates. These requirements will be developed in gate 4, following confirmation of the preferred solution established through pre-planning statutory consultation.

8.3.9 A gate 3 solution cost template is given in Annex A1 (Design Report) and presents the cost profile information.

[13] Pricing base date 2024

9. Stakeholder and customer engagement

9.1 Engagement in gate 3

9.1.1 Since gate 2, the GUC and Minworth SROs have featured in consultations for AfW's final WRMP24[14] and the WRSE Regional Plan[15]. No major concerns were raised regarding the Minworth SRO or GUC SRO, with general overall support for the SROs from a wider customer and stakeholder base.

9.1.2 Significant levels of customer engagement were conducted as part of the gate 2 delivery, looking at customers' views on a change of source water[16]. A range of other evidence (e.g. ST's customer research on water recycling, Southern Water's customer engagement on recycled water, and the recent Sundon Reservoir water source change engagement[17]) was also considered. The ST and Southern Water teams co-chair a national Water Recycling Communication Group, established to bring a coordinated approach to improve consistency of messaging for water recycling engagement.

9.1.3 The gate 2 report highlighted that the focus for gate 3 would need to be on the communities and stakeholders who could be impacted by the construction and/or operation of the scheme, with further customer engagement planned for gate 4.

9.1.4 These insights are informing the plan for gate 4 engagement with the AfW customers who will receive the new water source in by 2033. As verified in AfW's Customer Engagement Report 2024, engaging directly on the source change eight years in advance is too long a timeframe to rely on findings; however, the plans for gate 4 engagement are outlined in Section 11. Engagement will also continue with the communities and stakeholders along the route, as gate 4 engagement builds towards the statutory consultation in Autumn 2025.

9.2 Building an identity for the scheme

9.2.1 Although the GUC and Minworth SROs have been visible through the AfW WRMP24 and regional planning process, a step change in engagement was required as the SROs approached the wider public process of pre-application for the statutory consultation (outlined in guidance published by The Planning Inspectorate: Advice on working with public bodies in the infrastructure planning process).

9.2.2 The SRO partners recognised the importance of transparency – ensuring that the full extent of the Minworth and GUC SROs was visible, from the water recycling treatment at Minworth WwRC, the new Minworth AWTP, the pipelines, the new WTW, and the canal upgrade works. A decision was therefore taken to link the Minworth and GUC SROs together under one brand identity, the Grand Union Canal Transfer (GUCT), for the purpose of stakeholder engagement.

9.2.3 A clear brand was developed for the GUCT, including illustrations, typography, colours and messaging, with the aim of building recognition, trust and credibility, as shown in Figure 9.1.

[14] AfW WRMP Statement of Response 2024
[15] WRSE Draft Regional Plan Consultation Response
[16] AfW Water Sources Insights Summary
[17] Annex E1 (Stakeholder Engagement Report) provides more detail

It will also reduce any confusion regarding the different organisations involved, and allow engagement to be focused on the project itself.

Figure 9.1. Examples from Grand Union Canal Transfer (GUCT) brand book

9.2.4 The primary objective of the GUCT engagement strategy is to maximise advocacy and minimise opposition to the scheme and the DCO application among key stakeholders, local communities, canal users and end customers, with the aim of supporting successful consent and delivery for the scheme. Information from this engagement will also inform both Minworth and GUC SROs.

9.2.5 Supporting the engagement strategy are four key principles, outlined in Figure 9.2, to ensure the engagement is focused and delivers the primary objective.

Figure 9.2. Engagement strategy

9.3 Non-statutory consultation

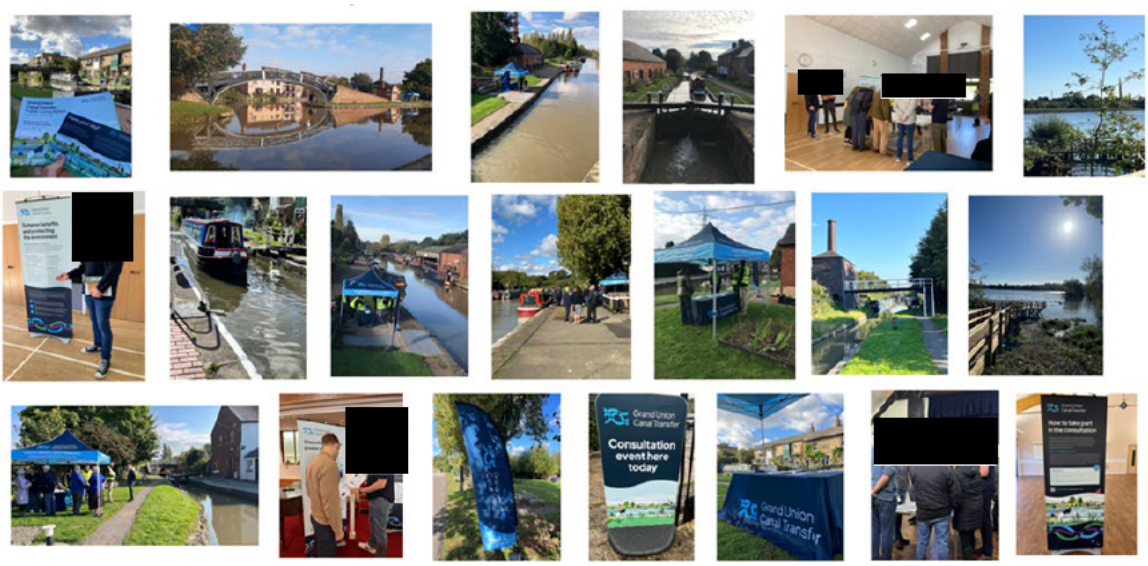
9.3.1 The aim of the non-statutory consultation, which took place from 11 September to 25 October 2024, was to raise awareness of the GUCT, broaden knowledge of the project along its route, and invite feedback at an early stage in the design process. This feedback will help inform the design and development of the GUCT, as well as the approach to statutory consultation, seeking to resolve issues early where possible.

9.3.2 To ensure the views of the communities and stakeholders impacted by all elements of the GUCT were captured, an extensive consultation boundary of up to 1km was set for the WTWs/storage sites, 500m for canal infrastructure (pumping stations, bypasses), and a 100m buffer either side of the pipeline corridors (extended in some instances to ensure whole villages were included).

9.3.3 Communities were notified of the consultation and associated events through postcards (over 14,000), emails (over 250), letters (to landowners), posters, social media posts and press briefings. Nine main consultation events were conducted along the route, and six 'pop-up' events along the canal. These engagement events were supplemented by several bespoke meetings with Parish Councils and local authorities, as well as one-to-one sessions with landowners. The approach for each consultee category can be found in Annex E1 (Stakeholder Engagement Report).

9.3.4 Some in-person consultation events were held at local community locations, and others took place at 'pop-up' locations along the canal, as shown in Figure 9.3. The locations were selected based on key sites where the GUCT could be most impactful to users of the canal, as well as ensuring a good spread along the whole route. The Ouzel Valley Park steering group, held at Astral Park, advised the addition of an event for the communities in Leighton Buzzard.

Figure 9.3. Photographs from the non-statutory consultation events

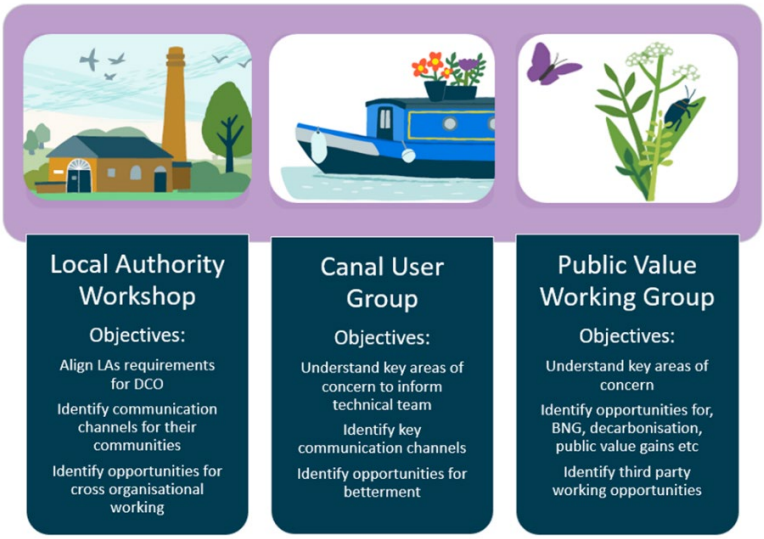


9.3.5 Although the public consultations are a key point of engagement for the GUCT, it is vital, because of the breadth and nature of the interventions needed, that a wider engagement programme is undertaken as well as formal consultation. It is also critical to ensure the length of time between communication on the non-statutory and statutory consultations is not too long.

9.3.6 The dedicated project website remains live, along with the project contact details for any questions, and interim feedback summaries and community updates will be published in between phases of formal consultation.

9.3.7 To keep this ongoing public contact consistent, three working groups (set out in Figure 9.4) will be created to focus conversations, share learning, and highlight opportunities for the GUCT.

Figure 9.4. Stakeholder working groups



9.3.8 In addition to the working groups, gate 4 plans include a focused, proactive engagement programme with parish councils. There are 98 parish/town councils along the route, and the programme will focus on those councils that are most impacted and interested. Engagement will also continue with a range of other interested groups. Full details are set out in Annex E1 (Stakeholder Engagement Report).

9.4 Stakeholder feedback

9.4.1 A total of 780 people attended 15 events through the non-statutory consultation, and 463 responses were received via the feedback form or email. A high-level summary of key themes is detailed in Figure 9.5, with more granular analysis in Annex E1 (Stakeholder Engagement Report).

Figure 9.5. Key themes from consultation feedback

Northern section	Canal section	Southern section
Concern regarding visual impact and construction impact of works at Minworth WwRC site. Concern regarding routing of northern pipeline, particularly in relation to Hurley. Concerns regarding visual impact of break pressure tank and location. Concern regarding impact on Coleshill Road. General concerns regarding impact, disruption and timing.	General support for the scheme. Concerns regarding outfall and a perceived risk of untreated wastewater entering the canal. Feedback regarding canal users and waterside businesses - including charities - that could be affected by potential disruption. Concern regarding flow and its potential impacts, particularly on banks, bridges and marinas. Disruption and visual impacts are key concerns with considered design being requested. Location-specific issues raised.	Landowner and Parish Council challenge regarding site B, challenging site identification process and impact on future plans for housing. Some concern regarding environmental impacts. High volume of community challenge on some sites, concerns regarding visual impact, access and direct impact on community. Aligned with feedback from the Parish Council and Local Authority. Location-specific feedback on southern pipeline route.

9.5 Next steps

9.5.1 Planning the statutory consultation

9.5.1.1 The ongoing engagement activity will continue between the non-statutory and statutory consultations, with the preparation of a Statement of Community Consultation (SoCC) which will set out the plans for the consultation and key parts of that engagement. The statutory consultation is likely to follow a similar approach to the non-statutory consultation, with the current timing planned for Autumn 2025. However, based on the responses received from the non-statutory consultation and feedback on the SoCC, a full review will be conducted to establish what worked well and what needs improvement, and to ensure that key areas of concern from the consultation are addressed. At this stage, further or different approaches will be considered if they are necessary to address those concerns.

9.5.1.2 The statutory consultation will provide more detail on the construction elements of the GUCT, its impact, and feedback on opportunities highlighted for public value. It will also provide more details on the potential environmental impacts of the scheme, through the publication of the Preliminary Environmental Information Report (PEIR). A key element of the statutory consultation will be bringing the project to life for the communities impacted, and the SRO partners are currently exploring opportunities for visualisation, additional information videos and even working physical models that could be used at the events to demonstrate the details of construction, including noise, vehicle movement and other potential concerns.

9.5.1.3 The statutory consultation will provide more detail on the construction elements of the GUCT, its impact, and feedback on opportunities highlighted for public value. Further opportunities will be fully explored and developed in Gate 4. This will be via the Public Value Working Group, and also from feedback gathered from the non-statutory consultation and other engagement with the local communities.

9.5.1.4 Public value could include elements such as local and procurement, giving back to the community affected by the project by improving access to the canal, and specific projects, e.g. working with Ruby's Yard Community Interest Company or helping local groups in Minworth to improve the surroundings of the WwRC. It could also include BNG opportunities in green spaces (e.g. the golf course) and ensuring the local community continues to have access to such areas; this is especially important in Atherstone, where green space is limited but critical for physical and mental health. A key element is bringing the project to life for the communities impacted, so that people can put forward ideas for where they think GUCT can add value.

9.5.2 Customer engagement on changing water source

9.5.2.1 Targeted engagement on the change of water source will commence in 2031, a year before the completion of the GUCT. Insights gathered nationally demonstrate that customers do not believe detailed engagement is required earlier than this. Annex E1 (Stakeholder Engagement Report) sets out the findings so far from research conducted nationally, as well as an analysis of the recent Sundon Reservoir source water change for AfW customers.

9.5.2.2 During gate 4, to further supplement this insight, taste testing research will be carried out in Water Resource Zone 3 of AfW's supply area, which is the likely zone to be initially impacted by the GUCT. A longitudinal study of impacts is also planned, identifying a group of customers most likely to be impacted and following them through the entire process of

change, in order to gain insight into how views would develop. Planning for this longitudinal study will require a large sample size to allow for attrition.

9.5.2.3 Gate 4 plans also include further exploration of the wider acceptability of using recycled water as a source, building on work done by Southern Water and ST, and testing whether AfW customers have similar attitudes to customers in other areas.

10. Board statement and assurance

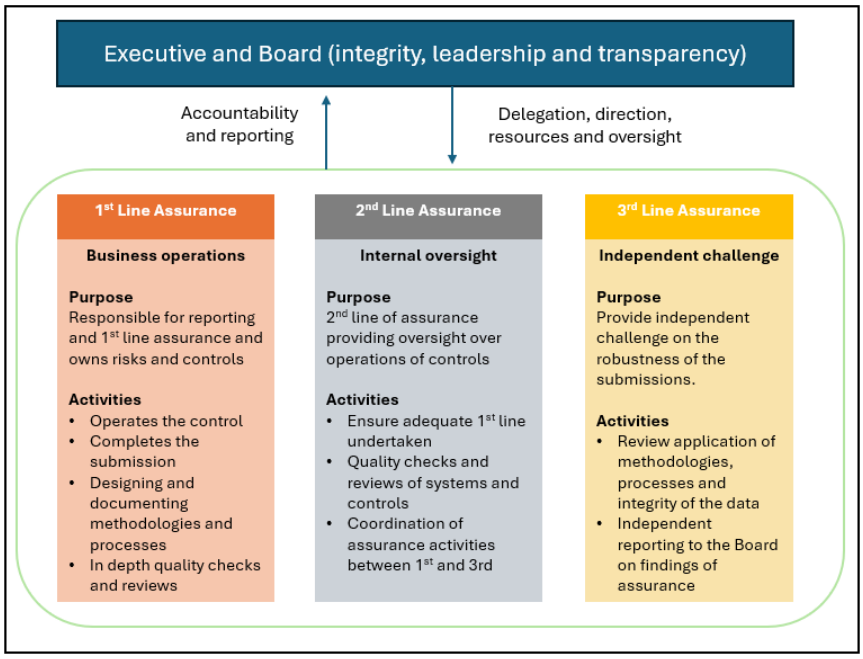
10.1 Board statement

10.1.1 The board statements are provided in the covering letter to this gate 3 submission. The boards of ST, AfW and the Trust support the recommendation for progression of this SRO. The views of the boards are aligned, as evidenced by their respective statements.

10.2 Assurance approach

10.2.1 The assurance framework used for this submission has been developed jointly by ST and AfW, and is set out in Figure 10.1. The risk-based assurance approach is consistent with that documented in the individual companies' statements of reporting risks, strengths and weaknesses, and is based on a shared understanding of the 'three lines of assurance' model. It is also consistent with the assurance requirements laid out in Ofwat's Company Monitoring Framework[18].

Figure 10.1. Risk assessment and assurance approach



10.2.2 This approach provides an effective programme of assurance that considers areas of prime importance to customers and regulators, or may have significant financial value, alongside the likelihood of reporting issues. Areas of higher risk receive three lines of assurance, and areas of lower risk receive first- and second-line assurance.

[18] Ofwat Company Monitoring Framework (ofwat.gov.uk)

10.2.3 Following a competitive tender, an external assurer was appointed. The third-line assurance statement (GUC SRO gate 3 report, Annex E2) confirms that the assurer is satisfied that, on the basis of the evidence presented and the limitations and scope of the assurance activities, the submission is suitable for progression through gate 3.

10.2.4 The board statement is supported by the assurance statement, and there are no outstanding material issues to be resolved prior to the gate 3 submission. The AfW and ST boards are satisfied that progress to date allows the scheme to meet the requirements as stated in the statutory WRMP24.

10.2.5 The SRO partners continually look to improve the assurance approach for GUC SRO, and will conduct a lessons-learned exercise before the approach is finalised for gate 4.

11. Efficiency of expenditure

11.1 Overview

11.1.1 This section provides a summary of information presented in Annex E3 (Efficiency of Expenditure) and utilises the RAPID gate 3 Efficiency of Expenditure template to detail incurred costs for each gate activity allocated to the categories.

11.1.2 The activities carried out were completed in order to investigate and develop a solution to gates 3 and 4, following the list in Annex 2 of Ofwat's PR19 FD guidance[19], and in the RAPID gate 3 guidance.

11.1.3 The Efficiency of Expenditure template aligns with the January 2025 quarterly dashboard, which aligns with the PR24 AMP Split template. All gate 3 figures quoted are in FY2017/18 price base, and all gate 4 costs are in FY2023/24 price base.

11.1.4 Care has been taken to ensure efficient spend on agreed appropriate activities to advance the development of this project in gate 3.

11.1.5 The GUC SRO RAPID final decision (June 2023, Section 4.2 and Table 4) allowed the SRO to use its previous underspends to offset expenditure above the cap to provide some flexibility against cost uncertainty. The gate 3 budget from PR19 (£6.3m) has been increased by an additional £1.95m allowance and the gate 2 underspend of £233k, giving a revised gate 3 budget of £8,482,832 (Table 11.1).

11.1.6 Table 11.1 provides the breakdown of the actual spend to the end of December 2024. There are no forecast costs included. A financial reconciliation post-gate 3 submission will be undertaken. The total spend against budget is £8.5m, with a balance remaining of £14k.

11.1.7 Minworth to Atherstone pipeline costs included in gate 2 submission for GUC SRO now form part of the Minworth SRO submission, as included in the SRO's slide pack to RAPID in March 2024 and confirmed at the May 2024 meeting with GUC and Minworth SROs.

[19] Annex 2 of PR19 final determinations: Strategic regional water resource solutions

Table 11.1. GUC SRO gate 3 expenditure

Category	Activity	Expenditure Activity (£) 17/18 Values	% of Total Expenditure Activity	Expenditure Category (£) 17/18 Values	% of Total Expenditure Category	Description
Programme and Project Management	Project Management	517,640	6%	935,115	11%	Project Management = 67% of expenditure activity PM Engineering Lead = 33% of expenditure activity
	Project Management Office	371,485	4%			PMO Support, Digital Tools, Programme Planning
	Assurance	45,990	1%			3rd line assurance and copywriting
Finalised Feasibility and Developed Design	Detailed Surveys	180,432	2%	2,002,504	24%	Detailed surveys (topographical, geotechnical & contaminated land)
	Engineering	1,393,175	16%			G3 Engineering contract = 79% of expenditure activity Change events = 21% of expenditure activity
	Modelling	415,125	5%			Modelling
	Construction Design Management	13,772	0%			CDM
Option benefits, development and appraisal	Option benefits, development and appraisal	-	0%	-	0%	incl in Feasibility Assessment
Environmental Assessment	Planning - DCO	453,830	5%	690,999	8%	Planning (EIA co-ordinator/ planning advisor)
	Environmental Regulators	237,169	3%			NAU/ EA and Natural England costs
Data collection, sampling and pilot trials	Environmental Monitoring	506,731	6%	3,260,816	39%	Early G3 spend in G2 period = 6% of expenditure activity G3 Environmental Monitoring contract = 58% of expenditure activity Change events = 36% of expenditure activity
	Targeted Surveys for EIA	956,298	11%			G3 EIA contract = 64% of expenditure activity Change events = 36% of expenditure activity
	Water Quality Monitoring	1,765,260	21%			Early G3 spend in G2 period = 5% of expenditure activity G3 WQ Monitoring contract = 26% of expenditure activity Change events = 69% of expenditure activity
	Drinking Water	32,527	0%			Drinking water safety plan update
Commerical and Procurement Strategy	Procurement and Funding Strategy	227,110	3%	355,556	4%	Procurement and Funding strategy (support/ advice)
	Engineering Procurement	128,446	2%			Engineering procurement
Planning and Land	Land Referencing	305,772	4%	342,357	4%	Land referencing
	Land Acquisition	-	0%			Land Acquisition
	Planning and Consents Fees	-	0%			Planning and Consents Fees
	Planning Performance Agreement	36,585	1%			Planning Performance Agreement
Stakeholder engagement	Stakeholder Engagement	232,573	3%	232,573	3%	Support to planning work
Legal	Commercial and Legal Advice	136,680	2%	136,680	2%	Commercial and legal advice
Other	The Trust	512,062	6%	512,062	6%	G3 contract = 88% of expenditure activity Change events = 12% of expenditure activity
	WRSE Regional Planning	-	0%			WRSE regional planning
Total		**8,468,662**	**100%**	**8,468,662**	**100%**	
Gate 3 Allowance	Gate 3 allowance £6.3M Gate 2 underspend £232,832 Additional allowance of £1.95M from RAPID gate 2 final decision	**8,482,832**		**8,482,832**	**8,482,832**	Additional budget items approved by RAPID gate 2 final decision 28/06/23
Gate under / overspend		14,170		14,170	14,170	

11.2 Early gate 4 spend

11.2.1 GUC SRO's gate 3 submission has been delayed from December 2024 to May 2025. This is due to RAPID's requirement for PINS to provide acceptance of the EIA scoping report prior to gate 3 submission, which was not a requirement in the latest RAPID gate 3 guidance.

11.2.2 The SRO requested RAPID's permission for £2.77m (current value) as early gate 4 spend for the period January to April 2025 (Table 11.2). RAPID approved this request on 14 January 2025.

Table 11.2. Early gate 4 planned expenditure

Category	Activity	Expenditure Activity £ current	Total expenditure £ 22/23 values	Expenditure Category £ 22/23 values
Programme and Project Management	Project Management & PMO	427,707	393,605	393,605
Finalised Feasibility and Developed Design	Detailed Surveys	100,000	92,027	625,783
	Engineering	450,000	414,121	
	Modelling	80,000	73,622	
	Construction Design Management	50,000	46,013	
Option benefits, development and appraisal	Planning - DCO	125,000	115,034	115,034
Environmental Assessment	Environmental Regulators	65,000	59,818	59,818
Data collection, sampling and pilot trials	Targeted Surveys for EIA	300,000	276,081	607,378
	Water Quality Monitoring	360,000	331,297	
Commerical and Procurement Strategy	Procurement and Funding Strategy	250,000	230,067	230,067
Planning and Land	Land Referencing	100,000	92,027	138,040
	Planning Performance Agreement	50,000	46,013	
Stakeholder engagement	Stakeholder Engagement	100,000	92,027	92,027
Legal	Commercial and Legal Advice	60,000	55,216	55,216
Other	The Trust	255,000	234,669	234,669
Total		**2,772,707**	**2,551,637**	**2,551,637**

11.3 Estimated gate 4 expenditure

11.3.1 A revised AMP8 budget of £38.51m has been made available[20] to the project. This includes the gate 4 expenditure to take the project through pre-application to DCO submission, as well as DPC activities. The current position is that 71% of this AMP8 funding will be required for the gate 4 period.

11.4 Solution progression

11.4.1 The GUC SRO partners recommend that the GUC SRO progresses to gate 4.

12. Conclusions and recommendations

12.1 Conclusions

12.1.1 The SRO partners have worked collaboratively to prepare this gate 3 submission. The GUC SRO utilises existing assets, provides highly treated recycled water, and has an integrated operating strategy to provide a viable and cost-effective solution to be carried forward to the DCO application stage. There are clear opportunities for enhancing public value, which can be more fully developed in tandem with the DCO consultation.

[20] PR24 Final determinations: Major projects development and delivery

12.1.2 The GUC SRO will deliver up to 100Ml/d from 2033, in line with the WRSE Regional Plan and the AfW WRMP24.

12.1.3 Utilising Minworth SRO as a source for the GUC SRO delivers increased drought resilience when compared to other supply options, by utilising recycled water from Minworth WwRC, which is being produced under all weather conditions.

12.1.4 The GUC SRO will enable AfW to reduce reliance on sensitive chalk groundwater sources, and cope with enhanced forecasted growth. The scheme uses existing canal assets as a conduit to transfer water between regions, minimising the need for construction and the use of new materials. It will provide a new revenue stream to the Trust, as the owner of the existing canal assets.

12.1.5 The SRO also provides an alternative major surface water supply to AfW in the event of an incident affecting BAU surface water supplies from the River Thames. This enhances operational resilience, in addition to the drought resilience benefit outlined above.

12.1.6 In gate 3, options have been identified for the location of the new WTW, the site for abstraction of water from the canal, and transfer pipelines to deliver treated water to AfW's water supply network. Further work with stakeholders is required to select a single site, and this work is progressing into gate 4.

12.1.7 A significant change from gate 2 is that the pumping station and c17km pipeline linking Minworth AWTP to the Coventry Canal at Atherstone is now included in the Minworth SRO, as agreed with RAPID early in gate 3.

12.1.8 GUC is potentially complex, both operationally and in terms of procurement, due to the use of existing assets that are owned by the Trust, and the number of companies involved in the scheme. As a result, the drafting of heads of terms of suitable commercial and legal arrangements has commenced through gate 3. The current preferred procurement route remains DPC, with the securing of a CAP for a 25-year concession period. This will be continually tested through extensive market engagement.

12.2 Conclusions

12.2.1 Through gate 3, no showstoppers or issues that threaten the validity of the SRO have been discovered. The SRO partners therefore recommend that the GUC SRO proceeds to gate 4.

13. Supporting documentation

13.1 Appendices

13.1.1 Appendix A provides GUC SRO's responses to regulator actions and recommendations at gate 2.

13.1.2 Appendix B signposts the key information required by the RAPID gate 3 guidance criteria.

13.2 Annexes

13.2.1 Table 13.1 provides the list of annexes that accompany this gate 3 submission. Where annex numbering is not concurrent, this indicates amalgamation of deliverables into fewer documents as the gate has progressed than anticipated at the outset.

Table 13.1. List of GUC SRO annexes

Ref	GUC SRO annex
GUC SRO Gate 3 Annex A1	Detailed Feasibility and Concept Design Report
GUC SRO Gate 3 Annex A4	Modelling Report
GUC SRO Gate 3 Annex A4.1	Water Resources Model Report
GUC SRO Gate 3 Annex A4.2	Hydraulic Modelling Report
GUC SRO Gate 3 Annex A4.3	CFD Modelling Report
GUC SRO Gate 3 Annex A4.4	Water Quality Modelling Report
GUC SRO Gate 3 Annex A4.5	Llangollen Velocity Investigation Report
GUC SRO Gate 3 Annex B1	Water Quality Monitoring
GUC SRO Gate 3 Annex B1.12	Water Quality Risk Assessment
GUC SRO Gate 3 Annex B1.13	Strategic Water Quality Risk Assessment Spreadsheet
GUC SRO Gate 3 Annex B3	Environmental Assessment Report
GUC SRO Gate 3 Annex B3.1	Aquatic Ecology Report
GUC SRO Gate 3 Annex B3.2	Flow Impacts on Sediment
GUC SRO Gate 3 Annex B3.3	Fisheries Assessment
GUC SRO Gate 3 Annex B3.4	INNS Risk Assessment
GUC SRO Gate 3 Annex B3.5	Water Vole & Mink Report
GUC SRO Gate 3 Annex B3.6	Bridge Bat Survey Report
GUC SRO Gate 3 Annex B3.7	Llangollen Canal Fish Habitats
GUC SRO Gate 3 Annex B3.9	Daventry and Drayton Reservoirs PEA
GUC SRO Gate 3 Annex B3.10	Daventry and Drayton Reservoirs Water Vole Report
GUC SRO Gate 3 Annex B3.11	Daventry and Drayton Reservoirs Otter Report
GUC SRO Gate 3 Annex B3.12	Daventry and Drayton Reservoirs Aquatic Ecology Report
GUC SRO Gate 3 Annex B3.14	Daventry and Drayton Reservoirs Hydromorphology Report
GUC SRO Gate 3 Annex B3.16	Habitats Regulations Assessment
GUC SRO Gate 3 Annex B3.17	Bat Hibernation Report
GUC SRO Gate 3 Annex B3.18	Water Framework Directive Assessment
GUC SRO Gate 3 Annex C1.3	Planning and Consents Strategy
GUC SRO Gate 3 Annex C2.1	Land Rights Strategy
GUC SRO Gate 3 Annex E1	Stakeholder Engagement
GUC SRO Gate 3 Annex E2	Assurance Report
GUC SRO Gate 3 Annex E3	Efficiency of Gate 3 Spend
GUC SRO Gate 3 Annex E4	Programme & Project Plan
GUC SRO Gate 3 Annex E5	GUC & Minworth Operating Philosophy

Appendix A Response to Regulator Actions and Recommendations at Gate 2

Tables A.1, A.2 and A.3 provide the SRO's responses to regulator actions and recommendations at gate 2, as submitted to RAPID in December 2023. Figure A1 provides the March 2024 confirmation from RAPID that the GUC gate 2 priority action is closed.

Table A.1. GUC SRO gate 2 priority actions

<table>
<tr><th>Nr</th><th>Section</th><th>Detail</th><th>Where is it addressed?</th><th>How is it addressed?</th></tr>
<tr><td>1</td><td>Evidence of efficient spend.</td><td>At the regular checkpoint meeting in December 2023, provide a report to RAPID on the expenditure incurred up to December 2023 and a revised forecast of expenditure to gate 3.</td><td>Completed template submitted to RAPID on 01/12/23. Confirmation received from RAPID on 15/03/24 that this gate 2 priority action is complete.</td><td>The submission is summarised below:
<table><tr><th>Item</th><th>17/18 values</th></tr><tr><td>GUC SRO gate 3 allowance</td><td>£8,482,832</td></tr><tr><td>Expenditure incurred up to October 2023</td><td>£2,123,628</td></tr><tr><td>Expenditure forecast November - December 2023</td><td>£854,776</td></tr><tr><td>Forecast additional spend to gate 3</td><td>£4,487,803</td></tr><tr><td>Revised forecast of expenditure to gate 3</td><td>£7,466,206</td></tr><tr><td>Revised forecast of expenditure to gate 3 in FY2022/23 values</td><td>£8,611,541</td></tr><tr><td>Contingency Risk</td><td>£1,016,626</td></tr></table></td></tr>
</table>

Figure A1: Confirmation from RAPID that gate 2 priority actions have been closed, 15/03/2024

[redacted]

From: [redacted]
Sent: 15 March 2024 08:53
To: [redacted]
Cc:
Subject: Minworth/ GUC gate 2 priority actions

Follow Up Flag: Follow up
Flag Status: Flagged

This Message Is From an External Sender

This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Report Suspicious

Hi All,

I wanted to provide you with an update on the progress regarding the priority actions for Minworth and GUC. In Gate 2, there was one priority action raised for GUC and four for Minworth. Thank you for submitting all the evidence for each priority action. We've reviewed the information you provided and are happy to close on all the priority actions.

Minworth Gate 2 priority actions

Priority Actions – to be addressed by the date specified against each priority action			
Number	Area	Detail	Assessment outcome
1	Programme and Planning	Review the technical discreteness assessment following Ofwat's issue of consultation on its updated guidance on technical discreetness and provide an updated assessment. This will be required by the regular checkpoint in December 2023.	Complete
2	Programme and Planning	Risk remains to the solution from the potential impact on water quality and compliance with the Water Framework Directive and environmental standards. Mitigation to reduce this risk is planned in the form of further modelling, monitoring and trial treatment programmes. Confirmation of mitigation measures should be submitted by the regular checkpoint in December 2023 for the treatment programme this means the bench trial package, to allow time for unresolved risks to be managed by the end of gate three.	Complete
3	Programme and Planning	By the regular checkpoint in December 2023 provide information and assurance to RAPID on how uncertainty with developing environmental advice will be managed by the project. This should include making allowances for adaptability within in the development of the pilot treatment plant and treatment processes required to meet regulatory standards.	Complete

1

4	Evidence of efficient spend	At the regular checkpoint meeting in December 2023, provide a report to RAPID on the expenditure incurred up to December 2023 and a revised forecast of expenditure to gate three.	Complete

GUC Gate 2 priority actions

Priority Actions – to be addressed by the date specified against each priority action			
1	Evidence of efficient spend	At the regular checkpoint meeting in December 2023, provide a report to RAPID on the expenditure incurred up to December 2023 and a revised forecast of expenditure to gate three.	Complete

Kind regards

[redacted]

Senior Associate, Engineer
RAPID

Ofwat, Centre City Tower, 7 Hill Street, Birmingham. B5 4UA
ofwat.gov.uk
Follow us at: twitter.com/ofwat

Table A.2. Response to regulator actions

Nr	Section	Detail	Where is it addressed?	How is it addressed?
1	Solution Design	Confirm to RAPID that the solution aligns with Severn Trent's and Affinity Water's Water Resource Management Plans (WRMP) and relevant Regional Plans at the next available regular checkpoint meeting after the publication of the WRMPs and Regional Plans.	Section 1 of the gate 3 report	In Affinity Water's WRMP24, the preferred water resource strategy includes the development of the Grand Union Canal, to deliver a deployable output of up to 100Ml/d from 2033. The WRSE Regional Plan 2024 has selected the GUC SRO as a single 100Ml/d phase as this helps provide additional resilience to Affinity Water to meet existing Water Industry National Environment Programme (WINEP) commitments, and also to enable a new reverse transfer between Affinity Water and Anglian Water, which will ultimately help to support Cambridge Water.
2	Solution Design	The scheme must provide updates on solution design to the Environment Agency through the development of design and operation of storage options which are to be incorporated within the scheme.	Section 2 of the gate 3 report and Annex A1 (Detailed Design Report)	Minworth SRO will supply raw water exclusively to the GUC SRO. Currently, treated flow from the Minworth Wastewater Recycling Centre discharges into the River Tame. Diverting flow to the GUC SRO will reduce the River Trent's flow. Existing abstractions along the River Trent adhere to a Hands-Off Flow (HoF) of 2,650Ml/d at North Muskham. Operating Minworth SRO to support the GUC could cause the HoF to be met earlier, affecting water availability for River Trent users. To mitigate this, storage is preferred. The SRO could draw from storage to support the transfer, allowing Minworth to discharge fully into the River Tame during low flows. In worst-case drought modelling, an annual storage need of 1,265 Ml (equivalent to 11 days of full scheme operation) is identified. Five days' storage (575 Ml) will be included at the abstraction location, with an additional six days' storage (690 Ml) provided at Daventry and Drayton reservoirs for this purpose. These reservoirs are owned and operated by the Canal & River Trust as a feed to the GUC.
3	Evaluation of Costs & Benefits	Update the Natural Capital Assessment so that valuation of ecosystem services are comparable and demonstrate benefit to the environment and society. The rationale for scoping out recreation requires additional explanation and amenity enhancement should be assessed quantitatively.	Sections 2.8 and 8.3 of the gate 3 report and Annex E1 (Stakeholder Engagement Report) following feedback from non-statutory consultation	The Natural Capital Assessment (NCA) is to be covered in the EIA workstream in gate 4. Recreation has not been scoped out; in fact, it is critical to this project, given the canal is already in use for recreation. Recreational activities such as boating and angling are expected to be scoped in for consideration and evaluated for their potential environmental impact as part of the EIA.

Nr	Section	Detail	Where is it addressed?	How is it addressed?
4	Programme and Planning	Risk remains to the solution from the potential impact on water quality and compliance with the Water Framework Directive and environmental standards. Mitigation to reduce this risk is planned in the form of further modelling, monitoring and trial treatment programmes. Delivery of this mitigation should be completed by December 2023. For the treatment programme, this means the bench trial package should be completed by this date, to allow time for unresolved risks to be managed by the end of gate 3.	Section 2.4 of Minworth SRO gate 3 report and Minworth Annex A4 (Process Design Report)	Laboratory 'bench' trials have been undertaken during gate 3 and the results from these trials have been used to inform the process design and the design of the pilot plant that will be operational for twelve months as a minimum. The pilot plant seeks to provide further certainty around the efficacy of the treatment processes through seasonal variations and trade waste import water quality challenges at Minworth WwRC, as well as influent canal water.
5	Programme and Planning	Further engage with Ofwat on the proposed commercial arrangements – specifically the approach to delivering the required work to the Canal and River Trust's assets. We expect that for gate 3 you will also be carrying out market engagement on this approach and would like you to engage with RAPID on feedback from the market prior to gate 3. Review technical discreteness assessment following Ofwat's forthcoming consultation on updated guidance and provide an updated assessment.	Section 7 of the gate 3 report	The project team has been liaising with Ofwat and has undertaken some initial market engagement to explore options. Regular monthly engagement with Ofwat has occurred throughout gate 3 across the development and submission of the stage 1 report, and development of the Stage 2 report. The engagement has taken the form of briefings and workshops for a better understanding of how the various agreements will work and what the initial proposals are. RAPID expect companies to have submitted and had accepted by Ofwat the DPC stage 1 and stage 2 submissions. We can confirm this activity has been completed. Valuable market insights were gained on key items such as DBF vs. DBFOM, timelines for DPC commencement in line with DCO/planning applications, and views on output/outcome specifications versus defined design specifications. The market also provided feedback on innovation scope, lifecycle cost reduction, and the value of large residual value bullet payments at the concession's end. All interviewed parties expressed interest in the project, highlighting its manageable size, appeal to contractors and financiers, and the environmental benefits of canal reuse. Additionally, we identified areas to reduce risk before procurement, such as addressing canal condition uncertainty and latent defect risks through thorough assessments and remediation.

Nr	Section	Detail	Where is it addressed?	How is it addressed?
6	Environment	Protected species (notably including water voles) surveys to be included within further assessment work. Consultation with the Environment Agency and Natural England on scope of surveys is necessary. Potential impacts on habitats and features of Local Wildlife Sites which the scheme has potential to impact should be investigated in gate 3.	Section 4 of the gate 3 report and Annexes B3 (Environmental Assessment Report) and B3.5 (Water Vole report)	Protected species surveys (for aquatic macroinvertebrates and macrophytes) have been completed at gate 3. The Environment Agency and Natural England were consulted on the draft scope of gate 3 assessments, and feedback was received and actioned. Detailed water vole surveys have been completed, informed by early engagement with the Environment Agency and Natural England to agree the scope of assessment (water vole scope meeting held on 17 May 2023) The Preliminary Ecological Assessment of Daventry and Drayton Reservoirs recommends further surveys to be completed once scheme design is known, including botanical and protected species surveys. Habitat loss and impacts would be mitigated, informed by the BNG assessment, and protected species mitigation licence(s) may be required. Protected species and Local Wildlife Sites will be further assessed as part of the EIA.
7	Environment	Further assessment into sediment mobilisation is necessary. Investigate the correlation between sediment mobility with release of contaminant into the water through operation of the transfer scheme causing sediment disturbance. Refine hydrological modelling of the Grand Union Canal, as per Final Modelling Report recommendations and through engagement with the Environment Agency, to better understand potential impacts. Refine Water Quality modelling, as per recommendations in the Point of Discharge WQ Assessment and through engagement with the	Section 4 of the gate 3 report and Annexes B3.2 (Hydromorphology and Sedimentation Report), B3.18 (Water Framework Directive Assessment), and A4.4 (Water Quality Modelling Report)	The gate 3 assessment of flow scenarios aimed to determine if the proposed scheme could increase bed sediment mobility, which could mobilise contaminants stored in canal beds. Risk maps were created to pinpoint areas needing further investigation. The canal bed mainly consists of silt and fine silt, with some areas of fine sand. Baseline flow conditions are insufficient to mobilise fine silt, meaning sediment typically settles on the canal bed, necessitating periodic dredging to maintain navigable depths. Under the proposed scheme, flow velocities and bed shear stresses increase, but in 97% of the modelled locations, these increases are not enough to mobilise bed sediment. However, in the largest flow scenario, some locations could see mobilisation of silts and fine silts, but not fine sand. The risk of increased bed sediment mobilisation due to the scheme is minimal. Critical shear stresses, which could initiate sediment motion, are reached mainly at narrow canal sections like bridges. These areas likely have coarser bed material and possibly additional bed protection, reducing the risk of significant sediment mobilisation. Current turbidity is mainly due to rainfall runoff, lock disturbances, boat traffic, and biotic activities. The scheme's impact on sediment mobilisation and turbidity is expected to be negligible. However, isolated areas with increased flow

Nr	Section	Detail	Where is it addressed?	How is it addressed?
		Environment Agency, to better understand potential impacts.		might need further assessment for contaminant exposure as part of the Environmental Impact Assessment (EIA). Concerns about turbidity from overflow at waste weirs are considered minor, they are mainly due to boat movements and will not be increased by the scheme. Throughout gate 3, there has been ongoing consultation with the Environment Agency to address key risks. Modelling using the current quality of recycled water identified ten determinands that would fail hazardous chemicals tests, indicating a need for further removal and regulation through environmental permits. Bench trials showed that through the proposed treatment seven of these determinands could be reduced to safe levels, with two achieving concentrations less than 10% of the Environmental Quality Standards (EQS). However, for four other chemicals, the limits of detection used in laboratory analysis were too high to confirm if deterioration could be prevented. Further work is required in gate 4. The mean water temperature in the canal is expected to rise but will remain within permissible levels, and dissolved oxygen levels are projected to stay within Fundamental Intermittent Standards (FIS) criteria. During the transfer operation, the discharge flow will be much higher than the canal's background flow, leading to varying water quality along the route.
8	Environment	Investigate pollution risk and potential impacts from various scenarios causing pollution events in gate 3.	Section 2 of the gate 3 report and Annex A1 (Detailed Design Report)	Initial considerations indicated that pollution events in the canal are low frequency and low impact. Bankside storage at the downstream abstraction location of 5 days at full flow rate should provide significant protection to the system when allied to water quality monitors in the canal. The risk of pollution will be further considered when the location of the abstraction is finalised and further assessment of the sensitivity of the potable water treatment process to a range of pollution taking account of operational rules and the Trust's arrangements for dealing with pollution.
9	Environment	Continue to investigate areas of INNS risk. Engage with the Environment Agency on scope for this work. Provide evidence to confirm treatment process will	Section 4 of the gate 3 report and Annex B3.8 Minworth SRO INNS risk assessment	This aspect is in the scope of the Minworth SRO. The Minworth WwRC report show that the risk of INNS transfer is low with the process provided to treat pre-screened recycled water and a biological/chemical treatment train which should reliably eliminate organic matter and flora/fauna.

Nr	Section	Detail	Where is it addressed?	How is it addressed?
		eliminate INNS from discharge into canal.		
10	Environment	Recommendations made by the Environment Agency and Natural England through gate 2 engagement should be used to inform gate 3 environmental work.	Section 4 of the gate 3 report and Annex B3 (Environmental Assessment Report)	The Environmental Assessment (gate 3) Scoping Technical Note, produced in March 2023, outlines the proposed approach to environmental assessment at RAPID gate 3. Defining the scope of gate 3 environmental assessments involved considering assessments completed at gate 1 and gate 2, along with their outcomes, regulator feedback, and any recommendations for further work. Regular meetings with key regulators, including the National Appraisal Unit (NAU), Environment Agency (EA) and Natural England (NE), have allowed SRO partners to present and discuss the proposed scope of monitoring and assessment detailed in this report. Feedback from these meetings has informed the finalisation of the scope. Additionally, quarterly review meetings with the Environment Agency have facilitated discussions on preliminary findings, successes, scope adjustments, potential concerns, and any specific additional or updated requirements.
	Environment	Improve the carbon assessment through clearer presentation on cost estimation and evidence thereof, and costs being mitigated by focussing on carbon. Uncertainty range, and mitigation, is expected to be presented in future assessments	Sections 5 and 8 of the gate 3 report and Annex A1 (Detailed Design Report)	Discussion of the best areas for managing carbon at minimum cost is included in Section 5.4 of the gate 3 report. This work will be further extended with more detail in future stages when the preferred scheme is selected following consultation.

Table A.3. Response to regulator recommendations

Nr	Section	Recommendations	Where is it addressed?	How is it addressed?
1	Solution Design	More detailed utilisation profiles should be provided at gate 3. Uncertainty and assumptions with utilisation profiles should be made clear.	Section 2 of the gate 3 report	This was discussed and agreed with RAPID during the representation meeting held in April 2023. GUC SRO currently provides a monthly utilisation profile (compared to annual figures in the Regional Plan), which is considered advanced at this stage of development. Additionally, the SRO aligns with the outcomes of the WRMP and the WRSE Regional Plan in terms of the case of need.

<table>
<tr><th>Nr</th><th>Section</th><th>Recommendations</th><th>Where is it addressed?</th><th>How is it addressed?</th></tr>
<tr><td></td><td></td><td></td><td></td><td>Affinity Water has reported on the latest regional modelling (WRSE and WRE) modifying the gate 2 utilisation profiles. The intention remains to have a consistent low flow throughout the year, governed by the minimum flow requirement of the transfer element most sensitive to flow (biological treatment process at Minworth). For higher demand periods, June to September, the flow will be gently ramped up over May to summer flow rates and gently ramped down over October. These are currently expected to be: normal year 60Mld; dry year 80Mld; and drought year between 100 and 115Mld. The normal year profile is used in the assessment of operating costs and carbon. Uncertainties about the actual frequency of dry and drought year flow rates and durations will always remain.</td></tr>
<tr><td>2</td><td>Solution Design</td><td>Acknowledgement of Level of Service is recommended for future submissions. The Level of Service against which the water resource benefit is calculated should be explained.</td><td>Section 1 of the gate 3 report</td><td>The resource benefit in DO terms is currently estimated from the Affinity Water system resource model at 100Mld at a 1 in 500 AEP drought Level of Service. This aligns with level of service as given in the WRMP.
The levels of service for drought interventions as detailed in AfW drought plan and replicated below have been used in the WRMP24 and have been used as the basis for our supply-demand and investment calculations, as required in the WRPG. These are the same for both household and non-household customers in AfW supply area.
<table>
<tr><th>Drought intervention measure</th><th>Level of service (frequency of imposition)</th></tr>
<tr><td>Media messaging and environmental triggers</td><td>1 in 5 years</td></tr>
<tr><td>Temporary Use Ban to restrict non-essential use</td><td>1 in 10 years</td></tr>
<tr><td>Non-essential Use Bans</td><td>1 in 80 years</td></tr>
<tr><td>Supply side Drought Orders and Permits (after 2025)</td><td>Not used - exceptional circumstances only (worse than 1-in-200-year event, rising to worse than 1 in 500- year event after 2040)</td></tr>
<tr><td>Standpipes and Emergency Drought Orders</td><td>Not used - exceptional circumstances only (worse than 1-in-200-year event, rising to worse than 1 in 500-year event after 2040)</td></tr>
</table></td></tr>
<tr><td>3</td><td>Solution Design</td><td>We would like to see evidence of proactive engagement with the</td><td></td><td>This is not applicable to the GUC SRO.</td></tr>
</table>

Nr	Section	Recommendations	Where is it addressed?	How is it addressed?
		Forestry Commission on solution design and site location.		At the GUC and Minworth meeting with RAPID on 27/04/23, RAPID advised this was a request from RAPID to all SROs, and if it is not applicable, it should be stated as so in the representation's response.
4	Evaluation of Costs & Benefits	Include descriptions and tables to show how cost estimates, including total planning period indicative option cost (net present value), for the preferred option have changed between each gate. Provide more detail on how uncertainty has been taken into account when calculating deployable output.	Section 8 of the gate 3 report and Annex A1 (Detailed Design Report)	The overall costs of construction and operation for the scheme, including each of the shortlisted options and costed options that have been discarded, are summarised in Annex A1. The costs include modifications to the existing canal infrastructure, abstraction from the GUC, storage and treatment prior to distribution to customers. The scheme has been sized and costed for the transfer of 115Ml/d in order to provide a deployable output of 100Ml/d. DO is a measure of the annual average level of demand increase that can be met by the scheme. Customers tend to use 12% more water during a hot summer than the average level for the year, the scheme is therefore sized to accommodate this. In addition a 3% allowance has been included as an estimate of process losses at the WTW..
5	Environment	Refine pipeline route in gate 3 to minimise potential impact on sites such as priority habitats and ancient woodland. Explore dredging as an alternative to bank raising. Provide more detail on how uncertainty has been taken into account when calculating carbon values.	Sections 2 and 4 of the gate 3 report and Annex A1 (Detailed Design Report) Dredging – note from the Trust 05/05/23 Section 5 of the gate 3 report and Annex A1 (Detailed Design Report)	• Pipeline routes in GUC Annex A1 and Minworth Annex A1. • Explaining dredging to maintain freeboard will be a more costly option with constant dredging requirement and issues with disposal of certain dredged material. However, there may be certain locations where it may be beneficial. Further review required. • Dredging silts back to the approximate level of the original puddle lining surface is viable, and would reduce the hydraulic gradient along a canal pound. However, this is a business-as-usual part of canal maintenance, with a cycle of silt build up over a number of years followed by dredging to remove excess silt depths. As part of this process the issue of appropriate disposal of dredged material needs to be addressed. Any dredging into or below the puddle liner would likely impact on the effectiveness of the liner to retain water and could potentially increase water losses via seepage and leakage. • Cost and carbon assessment work is still at a high level while the scheme options remain at a comparison stage. This work will be further extended with more detail in future stages when the preferred scheme is selected following consultation.
6	Solution design	We recommend that the solution owner continues to engage with Historic England on the work required to consider the historic	Section 2 of the gate 3 report and Annex A1 (Detailed Design Report)	The GUC SRO has established an agreement under Historic England's Enhanced Advisory Service. The table below sets out the engagement between the project team and Historic England during the gate 3 period.

<table>
<tr><th>Nr</th><th>Section</th><th>Recommendations</th><th>Where is it addressed?</th><th>How is it addressed?</th></tr>
<tr><td></td><td></td><td>environment. We recommend that the programme of planned investigations and assessments is reviewed regularly with Historic England.</td><td></td><td>
<table>
<tr><th>Task</th><th>Programme</th></tr>
<tr><td>Introductory meeting (project outline)</td><td>June 24</td></tr>
<tr><td>Site visit (scope to be discussed at introductory meeting)</td><td>July 24</td></tr>
<tr><td>Initial engagement workshop (Desk Based Assessment (DBA))</td><td>July 24</td></tr>
<tr><td>Feedback meeting (DBA)</td><td>August 24</td></tr>
<tr><td>DBA review</td><td>September 24</td></tr>
<tr><td>Bi-monthly meetings (if required in addition to those above)</td><td>June-November 24</td></tr>
</table>
</td></tr>
</table>

Appendix B Gate 3 guidance criteria and signposting appendix

Table B.1 signposts the key information required by the RAPID gate 3 guidance criteria.

Table B.1. Gate 3 guidance criteria and signposting

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
2.1 Background and objectives	N/A	The submission should outline what requirements and objectives this solution is aiming to address, including requirements and objectives set out by the Environment Agency for England in the National Framework for Water Resources, published in 2020 and the Water Strategy for Wales.	Yes	The solution aims to help reduce the amount of water abstracted from the environment, lessening dependence on sensitive chalk groundwater sources in AfW's central area. This helps protect chalk streams vulnerable to climate change and meets the rising water demands due to population growth in AfW's supply area. The SRO is a collaborative effort between AfW, ST, and the Trust. This partnership strengthens relationships, shares knowledge, and increases expertise in water quality and environmental data. The scheme leverages existing infrastructure to minimize construction and disruption, providing a low-carbon water transfer solution. It also enhances drought resilience by using recycled water from the Minworth WwRC.	Main gate 3 report	2.1 12.1
2.1 Background and objectives	N/A	The submission should demonstrate alignment with regional and company plan(s), explaining clearly how the regional and company planning process has informed the development of the solution,	Yes	The alignment is set out in the main gate 3 report. In AfW's WRMP24, the preferred strategy includes developing the GUC SRO to deliver up to 100 Ml/d from 2033. The	Main gate 3 report	2.1, 2.2, 2.10, 5.2, 6.1, 9.1, 9.2, 10.2, 12.1

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		and how the solution is reflected in the final plans.		revised draft WRSE Regional Plan has selected the GUC SRO to provide additional resilience and meet existing WINEP commitments.		
2.1 Background and objectives	N/A	Proposals that affect Wales will have regard to the interests of Wales, in particular sustainable management of its natural resources and Welsh legislation and policies including the guiding principles.	N/A	The GUC SRO is not in Wales.	N/A	N/A
2.2 The preferred solution option	The submission should provide design information about the preferred option for the solution and evidence justifying its selection with respect to the range of options considered in previous gates.	Solution description, updated from gate 2 where necessary.	Yes	The solution description and key changes since gate 2 are given in section 2.3 and 2.4 of the main report. The GUC SRO will transfer surplus water from ST's supply area to areas of water deficit in AfW's supply area. A new pipeline and existing canal infrastructure will be utilised to convey a source of raw water from the Minworth SRO to the GUC SRO. In the southern section of the GUC, water will be abstracted from the canal and treated prior to distribution to AfW customers. In gate 2, an example location for a new water storage reservoir and treatment works was used for reporting to RAPID. However, further investigations in gate 3 revealed several constraints during the evaluation and consultation process. Work in gate 3 aimed to find suitable locations for abstraction and treatment works, considering various criteria such as	Main gate 3 report Annexes A1 , B1, B3, C1.3, C2.1	2.3, 2.4, 3.1, 4.1

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
				engineering, environmental, social, planning, and land factors.		
		Utilisation rates for dry year annual average operation, for events such as 1 in 500 year droughts, peak demand or as part of emergency response, in addition to standby, or normal-year operation.	Yes	Utilisation in high-demand periods is currently expected to be 60Mld for a normal year, 80Mld for a dry year and between 100 and 115Mld for a severe drought year.	Main gate 3 report Annex A1 Annex A4 Annex A5	2.10
		Where uncertainty exists in utilisation rates, utilisation rates should be provided for a range of clearly defined scenarios representing the uncertainties. Further work should be detailed to address uncertainties, or statements made where uncertainties may remain in the long term.	Yes	Modelling of 2 scenarios was agreed with RAPID in April 2023. GUC SRO currently provide monthly utilisation profile (compared to annual figures in the Regional Plan), which is considered advanced at this stage of development. The SRO aligns with the outcomes of the WRMP and the WRSE Regional Plan in terms of the case of need. Uncertainties about the actual frequency of dry and drought year flow rates and durations will always remain.	Main gate 3 report Annex A1 Annex A4 Annex A5	2.10
		Final conclusions around third party options which have been explored to increase utilisation and value from solution supply.	Yes	The project utilises a third-party asset (canal) so the opportunity to enhance through development of the project remains a real positive for the project. Third-party options are bring explored for BNG and societal value solutions, and will continue in gate 4 as part of the DCO pre-application phase.	Main gate 3 report Annex E1	2.4, 2.12, 4.6, 9.5
		Where multiple users (public water supply or third party) form part of the utilisation of the solution, the submission should set out the preferred prioritisation rules with clear	N/A	The supply is for AfW (although the scheme will enable a reverse transfer between AfW and Anglian Water,	Main gate 3 report	2.1

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		justification for how these have been developed, an indication that users and prioritisation agreements have been considered in the solution's commercial model (the detail of which may be presented in section 7) and a strategy and indicative timetable for delivering the necessary agreements.		eliminating the need for supply from Grafham Reservoir).		
		A clear description of the risks and assumptions in the utilisation figures presented, their impacts and how these will be managed in the detailed design and operation of the solution.	Yes	AfW has reported on the latest regional modelling (WRSE and WRE) modifying the gate 2 utilisation profiles. The intention remains to have a consistent low flow throughout the year, governed by the minimum flow requirement of the transfer element most sensitive to flow (biological treatment process at Minworth). For higher demand periods, June to September, the flow will be gently ramped up over May to summer flow rates and gently ramped down over October. Annex E5 (Operating Strategy) set out key constraints and proposed operation methods for the scheme.	Main gate 3 report Annex E5	2.10, 2.11
		A clear explanation of how asset management plans are being developed to ensure the solution will provide the intended deployable output when required, especially when utilisation may be infrequent such as in severe droughts.	Yes	The SRO's operational philosophy (Annex E5) focuses on supporting abstraction and treatment while maintaining navigation. It includes three main operating regimes, these are low off-season, summer operation, and emergency response operation. Constraints and controls to ensure the scheme provides the intended DO are also described in Annex E5.	Main gate 3 report Annex A4 Annex E5	2.5

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
2.2 Water Resource Benefit	The water resources benefit should be quantified to a high degree of confidence, with uncertainties explored, quantified and mitigated where feasible. Calculations on water resources benefit should be aligned with linked solutions, regional and company water resources modelling and planning	The water resource benefit, aligned and consistent with the need and justification presented in final published company and regional water resource plans (draft plans if final plans are not available).	Yes	The revised draft WRSE Regional Plan has selected the GUC SRO as a single 100Ml/d (DO) phase as this helps provide additional resilience to AfW to meet existing Water Industry National Environment Programme (WINEP) commitments.	Main gate 3 report	2.1, 2.11, 2.13
		A finalised water resource benefit assessment including conjunctive use benefit where relevant, consistent with information provided to regional groups to support assessment of regional water resource benefit.	Yes	The SRO aims to improve the ADO by providing a drought-resilient supply source of up to 115Ml/d. This extra capacity can be used when demand rises or supply is disrupted, with full utilization needed mainly in summer. The scheme also accounts for AfW's limited storage and treatment losses, ensuring a minimum operational flow of 23Ml/d year-round to maintain treatment processes.	Main gate 3 report	2.11
		The water resource benefit of the solution, as a deployable output. Where solutions have previously presented a yield, water resource benefit assessments should now incorporate areas suppling and receiving yield to present a deployable output of the solution as a whole.	Yes	Scheme water resource benefit. The SRO has been sized and costed for the transfer of 115Ml/d in order to provide a deployable output of 100Ml/d.	Main gate 3 report	2.2
		Deployable output, presented for the dry year annual average and critical periods, for events such as the 1 in 500 year drought, considering spatial coincidence where relevant.	Yes	1 in 500-year Deployable Output (DO) of 100Ml/d.	Main gate 3 report	Table 1.1, 2.1
		If the solution concerns offsetting a change or redirection of supply, deployable output	Yes	The scheme does not involve a redirection of supply. Water from Minworth WwRC is	Main gate 3 report	2.2

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		presented to ensure the water resource benefit is sufficient to maintain consumer supply		currently discharged into the River Tame. A proportion of the water will be treated and diverted to the GUC SRO.		
		Methods and calculations which are well evidenced, for example with modelling that utilises appropriate inflow sequences to test relevant drought events, up-to date demand forecasts, and includes environmental and operational constrictions to the water resource benefit, and constraints from other users of the resource. Assumptions in the calculation should be clearly stated.	Yes	Minworth SRO will be the sole water source for the GUC SRO, diverting recycled water from Minworth WwRC that currently flows into the River Tame. This diversion could reduce flow in the River Trent, potentially triggering the Hands-Off Flow (HoF) threshold earlier and affecting water availability for users. To mitigate this, storage has been identified as the preferred solution, requiring 1,265 million litres annually for worst-case drought scenarios (equivalent to 11 days full flow operation). Hydrological and hydraulic modelling shows only small changes in flow depths and velocities in the Rivers Tame and Trent, not expected to deteriorate WFD status. An interaction with the Lincolnshire Reservoir SRO was resolved by moving the latter's abstraction point below Cromwell Weir.	Main gate 3 report Minworth SRO gate 3 report Minworth Annex B1.6	2.4.6
		An assessment of the risks and uncertainty associated with the water resources benefit of the solution, including the likelihood and impact on solution deployable output due to climate change, and how risks and uncertainties will be	Yes	Risks to water resource benefit and management. In gate 4 further system modelling and assessments will be undertaken to assess additional climate change scenarios.	Main gate 3 report Annex E5	2.11

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		managed through design and operation of the solution				
		The Level of Service against which the water resource benefit is calculated and an explanation of the calculation.	Yes	The levels of service for drought interventions as detailed in AfW drought plan have been used in the WRMP24 and have been used as the basis for our supply-demand and investment calculations, as required in the WRPG.	Main gate 3 report	Table A.3, Appendix A
		Where the water resource benefit is received, and by whom. The water resource benefit should be contextualised (and its need justified) through the impact is has on the forecast supply-demand balance of the benefiting area.	Yes	AfW is focusing on reducing the amount of water taken from sensitive chalk groundwater sources by implementing alternative water sources to meet future water demand in their central area.	Main gate 3 report	2.1
		An explanation on how outage may be considered for the solution in the context of describing its water resource benefit, in the event this would be calculated any differently or separately to any other of the water companies' assets or projects in the relevant WRMP.	Yes	The Aquator software platform model of the GUC helps AfW understand how outages along the canal would impact water availability in the central area. This model allows for a comprehensive assessment of system resilience and risk analysis of potential outages. It represents AfW's WRZ3 and the GUC system as groundwater components, including supply from Grafham Reservoir.	Main gate 3 report Annex E5	2.9
2.2.3 Long term opportunities and scalability	The scope and potential for wider benefits is dependent on solution type, some solutions having much greater potential in this area than others.	At gate 3 it is expected that opportunities to realise wider benefits and benefits to third parties will be being, or have been, explored through stakeholder consultation, including cross-border stakeholder engagement with Wales (see Stakeholder and Customer Engagement section), and	Yes	As part of non-statutory consultation process key areas have been identified where working groups would be beneficial to the scheme and to stakeholders involved. This will focus conversations, share learning, and highlight opportunities for the scheme such as BNG,	Main gate 3 report Annex E1	2.12, 9

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		integrated into the solution design and proposed modes of operation.		decarbonisation, public value gains. Some of these potential opportunities are described in section 2.8. Further work to continue the development of these opportunities will continue throughout gate 4 (DCO pre-application).		
		Progress on any modifications or enhancements to the solution design to realise these benefits should be clearly set out, together with a justification for their inclusion, and associated costs.	Yes	Potential benefits have been identified. At this stage of the project the cost of scheme benefits are not included in cost estimates. These requirements will be developed in gate 4 following confirmation of the preferred solution established through pre-planning statutory consultation.	Main gate 3 report Annex A1, B3, E1	2.12, 9
		Benefits should be aligned with, but not limited to, best value planning metrics (see section 8), noting also the aspects to consider in compiling a best value plan in Section 9 of the Water Resource Planning Guideline.	Yes	Chapter 9 of AfW's WMP24 details the best value plan and concludes upon the initial development of the 100Ml/d GUC transfer. The scheme aims to enhance the environment, boost biodiversity, and improve canal access and flood resilience. It has the potential to generate revenue for the Trust, support canal improvements, and maintain water levels in warmer weather. Additionally, it could create jobs, provide education and training, and enhance public spaces, especially around canal works and bypass locations.	Main gate 3 report Annex A1	5.1, 8.1, 8.2
		Where options were available for scaling a solution to accommodate future capacity needs, or modify the solution in future to	Yes	The SRO partners provided WRSE with multiple costed options, including a phased option to build in two parts. The	Main gate 3 report Annex E5	2.13

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		mitigate uncertainties, justification should be presented for the preferred proposed option. This should include an appraisal of the costs and benefits of different scaling options, and their potential timings.		revised draft WRSE Regional Plan has selected the GUC SRO as being required as a single 115Ml/d capacity (100Ml/d DO) phase.		
		As part of this justification, the cost differential of including scalability should be provided. Solution owners should identify where the scalability costs move from marginal (and therefore good value) to significant cost increases which could outweigh the benefits. This trigger point should be clearly outlined in the solution cost tables.	Yes	The team is exploring how the project could be constructed in phases to potentially delivery DO earlier. The full 115Ml/d capacity scheme was selected in WRSE and WRMP24 and delivering this requirement remains the priority.	Main gate 3 report Annex E5	2.13, 6.1
		A preferred scaling option should be clearly justified based on assessments undertaken.	Yes		Main gate 3 report Annex E5	2.13
		The preferred option should have given consideration to incorporating critical components that would be difficult to upgrade at a later date into the design from the outset, to enable modular build.	Yes		Main gate 3 report Annex E5	2.13
		All infrastructure associated with the solutions must be designed to be resilient to flooding over the life of its design and delivered in accordance with the National Planning Policy Framework / National Policy Statement for England and Wales, not being sited in an area at unacceptable risk of flooding or coastal erosion if the	Yes	Flood risk to various scheme components have been assessed and proposed design solutions identified to ensure safe operation and management. Work will continue throughout gate 4 to continue to align the project to NPPF and NPS requirements to ensure a successful DCO application.	Main gate 3 report Annexes A1, A4, B3, E5	2.14, 4.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		design has not taken sufficient account of the risk and provided suitable mitigation measures to deal with those risks. For solutions that affect Wales, the Water Strategy for Wales sets out expectations in this area.				
		Evidence on an initial flood risk assessment is expected. Evidence should be provided on the flood and / or coastal erosion risk for the solution (flooding risk the solution is exposed to, and flooding risk which the solution may cause or exacerbate), and set out a strategy for mitigating risks during the detailed design phase. Gate 3 submissions may signpost out to standalone, published, flood risk assessments for further detail where available. In the case of reservoirs, a summary of the potential safety risks and how these will be managed during design and operation should be provided.	No	This is a gate 4 activity for the project and will form part of the EIA to be submitted as part of the DCO application.	Main gate 3 report	2.14
		We expect solution owners to assess and identify where infrastructure associated with the solutions can be designed to optimise and deliver wider flood risk management benefits, either as stand-alone or in partnership with other organisations including other Risk Management Authorities (RMAs). This could include for example, designing infrastructure to attenuate flood waters or	Yes	There is current surface water and river flood risk from the canal and local rivers. A detailed flood risk assessment for the scheme is to be carried out in gate 4 as part of the environmental impact assessment of the scheme. This will assess the risks of all forms of flooding to and from the development and demonstrate how these flood risks will be managed.	Main gate 3 report Annex A1	2.4, 2.14, 4.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		working with other RMAs to deliver collaborative infrastructure plans.				
		Evidence should be provided on whether or how the solution may be used or adapted to realise wider flood risk management benefits, though design and / or operation, and the steps required to incorporate this in the detailed design and operation of the solution. This should be considered and applied across the entirety of the solution, where the solution may span many spatial areas, and particular consideration to where solutions may affect cross-border areas and Wales.	Yes	The scheme can be shut down through closure of bypasses as soon as any flood risk is raised. Additionally, if the system already has sufficient water to be moved, there is little need to continue to discharge Minworth into the canal system.	Main gate 3 report Annex A1	2.4, 2.14, 4.3
		All infrastructure associated with solutions should be designed taking into account the latest UK Climate Projections (UKCP). The Environment Agency, Welsh Government and Natural Resources Wales provide guidance on how to incorporate climate change allowances within flood risk assessments.	In-Part	UKCP projections on source water (Minworth) impacts to the R. Tame and R. Trent have been considered within the Minworth SRO G3 paper. The SRO team has liaised with the EA and NAU on this throughout gate 3. In gate 4, adjusted flows will be used in the canal Aquator model to simulate the impact of climate change on the scheme's feasibility.	Minworth SRO submission 3 Annexes B1.6 and B3.6	2.14
3 Drinking Water Quality	Submissions should provide updated assessments of drinking water quality considerations and potential risks to drinking water quality and supply issues and resilience.	Well-developed Drinking Water Safety Plans.	Yes	Drinking Water Safety Plan developed based on the approach specified in AfW's DWSP methodology and the guidance from the World Health Organization (Water Safety Plan Manual Second Edition 2023). It provides an update from the RAPID gate 2 submission with regard	Main gate 3 report Annex A1 (Annex H)	3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
				to drinking water quality considerations and potential risks to drinking water quality, supply issues and resilience		
		Details of proposed mitigation for any emerging contaminants identified.	Yes	The AWTP for the Minworth SRO is to provide treatment to ensure no deterioration to the receiving waterbody. The DWSP provides a review of proposed mitigations for regulated and emerging contaminants identified as hazards.	Main gate 3 report Annex A1 (Annex H) Annex B1	3.3, 6.2
		Evidence of consultation with stakeholders and consumer engagement, paying particular attention to consumers and stakeholders who will receive water from a different or blended source.	Yes	The gate 3 report sets out the engagement and consultation work undertaken in gate 3. This includes completing a non-statutory consultation. Section 9 and Annex E1 sets out how the SRO has continued to engage customers, communities and stakeholders regarding the scheme. The gate 2 report emphasized the need to focus on communities and stakeholders affected by the scheme during gate 3, with further customer engagement planned for gate 4. The 'Change of Source – Customer Engagement Report 2024' confirmed that engaging on the source change eight years in advance is too early to rely on findings. Plans for gate 4 are detailed in Section 11 Annex E1.	Main gate 3 report Annex A1 (Annex H) Annex B1 Annex E1	3.4, 9
		A plan for continued engagement and any required mitigation provided.	Yes	Section 2 of Annex E1 sets out plans for continued engagement. Gate 4 will include customer engagement. The SRO partners will also continue to engage with	Main gate 3 report Annex A1 (Annex H)	3.4, 9

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
				communities and stakeholders along the route, building towards the statutory consultation in Autumn 2025.	Annex B1 Annex E1	
3 Drinking Water Quality		Details of any specific concerns from company drinking water quality teams and how they will be addressed.	Yes	The Drinking Water Safety Plan (DWSP) has continued to be developed through gate 3 in collaboration with the DWI. The design for the new potable water treatment works is based on jar testing, a drinking water quality risk assessment, and the existing water chemistry in the AfW distribution system. The pilot plant will be operated in 2025 to refine the process design and chemical selection for treatment. Algal growth in bankside storage is a potential risk, which will be addressed in the design of storage and treatment works. Engagement with key regulators and internal experts continues, including monitoring for PFAS throughout the transfer route and at Daventry and Drayton Reservoirs.	Annex A1	Appendix H (DWSP)
		Details of any specific concerns from the Drinking Water Inspectorate (DWI) and how these will be addressed.	Yes	In May 2024, the SRO team met with the DWI to update them on the WQRA for gate 3. The scheme overview was presented and the approach was discussed. The WQRA outcomes included updates on new limiting hazards and changes in perceived likelihood risks.	Main gate 3 report Annex A1 (Annex H) Annex B1 Annex E1	3.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		In scenarios where there is expected to be a change of source water, that testing has been carried out to ascertain any risks that may come with this change.	Yes	Taste is one of the determinands to be allocated an increase in likelihood. Taste underwent an increase in likelihood post-control due to no guarantee that the consumer would accept the source change of water. Taste-testing research is planned for gate 4 Zone 3, as well as a longitudinal study to follow impacted customers through the entire process.	Main gate 3 report Annex A1 (Annex H) Annex B1 Annex E1	3.4, 9
		Deployable output expected from the solution, consistent with the Regional Plan and WRMP.	Yes	The revised draft WRSE Regional Plan & WRMP24 have selected the GUC SRO to provide a drought-resilient supply source of 100Ml/d.	Main gate 3 report Annex A4 Annex A5	2.1, 2.11
		Where remineralisation is being undertaken prior to mixing with another source of water, that any risks associated with this are captured in the DWSP.	N/A	Remineralisation is not being proposed.	Annex A1	Appendix H
		Consideration of the requirements of Regulation 31 and tracking of any products required for use.	Yes	One of the main focus points of the DWSP is to satisfy requirements of Regulation 31.	Main gate 3 report Annex A1 (Annex H) Annex B1	3.3
		Consideration of the requirements of Regulation 15.	Yes	One of the main focus points of the DWSP is to satisfy requirements of Regulation 15.	Main gate 3 report Annex A1 (Annex H) Annex B1	3.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		Ensure alignment with Resilience of water supplies in Water Resource Planning – Guidance Note (dwi.gov.uk) on long term planning, and The Water Supply (Water Quality) Regulations 2016 (legislation.gov.uk) for England and The Water Supply (Water Quality) Regulations 2018 (legislation.gov.uk) for Wales. This should be considered in the concept design report.	Yes	The design in the detailed feasibility and concept design is aligned with DWI guidance note on resilience of water supplies in water resource planning for the long term. Using treated wastewater from Minworth WwRC increases drought resilience and provides an alternative major surface water supply to AfW in case of incidents affecting the River Thames.	Main gate 3 report Annex A1 (Annex H) Annex B1	2.1, 2.2, 2.10, 2.11, 3.1, 3.3, 6.2, 12.1
4. Environmental	Environmental assessments of the solution should be sufficiently advanced to support DCO or local planning pre-application stages after the gate.	Evidence base requirements, risks, and relevant mitigation measures should be thoroughly explored and discussed with environmental regulators.	Yes	During gate 3, the SRO partners have onboarded an expert EIA team to deliver the large EIA scoping exercise for GUC SRO. Initial Phase 1 surveys have been undertaken along the canal route (UK Hab Surveys) including the Daventry and Drayton Reservoirs, at two abstraction locations, three of the four sites for potential treatment and/or storage assets (one is not possible as access has not been granted), and across several pipeline corridors. This is consistent with the non-statutory consultation materials. Substantial pre-application work is planned to continue throughout gate 4.	Main gate 3 report Annexes B3, B3.1, B3.2, B3.3, B3.4, B3.5, B3.6, B3.7, B3.9, B3.10, B3.11, B3.12, B3.14, B3.16, B3.17, B3.18	4
4.1 WFD Assessment	You must be assessing your solution to ensure it complies with and supports the achievement of The Water Environment (Water Framework Directive) (England and Wales)	Evidence (including monitoring evidence) that the solution will meet WFD objectives	Yes	The findings of the Level 2 WFD assessment identified six potential impacts. The assessment found that five of these six risks can be discounted for all waterbodies, but there are potential WFD	Main gate 3 report Annexes B3, B3.18 (WFD Report)	4.2

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
	Regulations 2017 requirements and objectives as set out in the River Basin Management Plans.			compliance risks relating to changes in water quality due to the transfer of water into the canal network.	Annex 4.4 (Water Quality Modelling Report)	
		If necessary, evidence that Regulation 1911 test criteria will be met.	N/A	N/A	N/A	N/A
		If uncertainties remain in your assessment, you must provide a plan to gather further evidence in a timely manner.	Yes	The process design of Minworth AWTP will need to be examined further at gate 4. Provided the required level of treatment is achieved, there are no anticipated risks to WFD compliance associated with the proposed scheme. There is also a risk of mobilisation of contaminants from sediment which requires further assessment at gate 4.	Main gate 3 report Annexes B3, B3.18	4.2
4.2 HRA Habitats Regulations Assessment	HRA should be sufficiently advanced to represent the solution's position within DCO or local planning pre-application stages and follow the latest HRA guidance.	Please note that the source and receiving water bodies, as well as any transfer will need to have compatible HRAs, where applicable.	Yes	The scope of assessment is informed by on-going regulator and stakeholder engagement, both through gate 1 and gate 2, and through developing the scope for gate 3 assessment. The HRA undertakes a screening of likely significant effects (LSEs) to allow for the assessment of deliverability. The rationale for the gate 3 assessment is justified following consideration of the potential impacts of the proposed GUC SRO.	Main gate 3 report Annexes B3, B3.16	4.3
		Where HRAs are not applicable to a solution, please confirm this in the submission.	N/A	HRA is a requirement for this SRO.	Main gate 3 report Annexes B3, B3.16	4.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		Where an HRA may indicate that a solution could have an adverse effect on a European Site or a European Offshore Marine Site (either alone or in combination with other plans or projects), an outline strategy should be provided for ensuring that there will be no such effect or demonstrating that there are no alternatives and that the solution must be carried out for imperative reasons of overriding public interest.	Yes	Three Habitats Sites were assessed for LSEs: Upper Nene Valley Gravel Pits SPA/Ramsar site, Ensor's Pool SAC, and Chilterns Beechwoods SAC. Chilterns Beechwoods SAC was dismissed due to no connecting pathways and no dependency on water levels. Ensor's Pool SAC was dismissed as it is groundwater-fed and not linked to nearby watercourses. Upper Nene Valley Gravel Pits SPA/Ramsar was dismissed because water quality will be treated before discharge, and increased flow will be directed southwards. No LSEs on any Habitats Sites were concluded. This will be reviewed as HRA work for Gate 4 progresses.	Main gate 3 report Annexes B3, B3.16	4.3
		Where mitigation or other measures need to be taken in connection with the effects on a European Site or a European Offshore Marine Site, the outline strategy should set out how these measures are to be implemented and an indicative timetable for implementation.	Yes		Main gate 3 report Annexes B3, B3.16	4.3
		The outline strategy and indicative timetable should be sufficiently developed for RAPID to assess its likely deliverability. We recommend consulting with the Environment Agency, Natural England (England only) and Natural Resources Wales (Wales only) on the strategy.	Yes		Main gate 3 report Annexes B3, B3.16	4.3
4.3 EIA	For most solutions, a statutory Environmental Impact Assessment (EIA) will be required to support planning and permitting applications.	The solution owner is expected by gate three to know the likely scope of the EIA through informal consultation with environmental regulators but application for a formal EIA scoping opinion does not have to be made by gate three.	Yes	The EIA scoping report was submitted to PINS in March 2025 as part of the pre-application phase to support a DCO application for the Grand Union Canal Transfer (GUCT), which includes both Minworth SRO and GUC SRO.	Main gate 3 report	4.4

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		We recommend consulting with Local Planning Authorities, PEDW, or referring to The Planning Inspectorate guidance for DCO applications. The Planning Inspectorate provides Advice Notes12 on a number of topic areas relating to environmental assessments and the roles of statutory consultees and other advisory bodies. Advice Notes 3 and 713 are specifically related to EIA.	Yes	The EIA scoping report, submitted to PINS, considers feedback from the non-statutory consultation, which took place from 11 September to 25 October 2024. PEDW is not relevant to Minworth SRO. An inception meeting was held with PINS on 14 February 2025. During gate 3, the SRO team established a Local Authorities Liaison Group (LALG) to liaise with local authorities affected by the scheme, to provide updates and receive feedback on the emerging proposals. The LALG will continue to meet during gate 4. Via the LALG, it intended that topic-specific technical working groups will be established to cover specific matters relevant to the ongoing assessment. The EIA scoping report has been submitted to PINS, and was produced with regard to PINS advice notes. A PEIR will be prepared, and statutory consultation will be undertaken as described in Section 6. In addition to the regulatory engagement completed as part of the RAPID process, ongoing technical engagement with statutory stakeholders will be undertaken as part of the EIA work. This will include (but not be limited to) discussion on proposed assessment methodologies, assumptions and limitations, baseline conditions, potential effects and mitigation options.	Main gate 3 report Annex C1.3	4.4, 6

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
4.4 National Parks, The Broads and Areas of Outstanding Natural Beauty	For solutions that may affect National Parks, The Broads or Areas of Outstanding Natural Beauty, the likely effects on those areas should be assessed, having regard to the statutory purposes for which the areas are designated.	An outline strategy should be provided summarising the likely effects on these areas and showing how these effects will be addressed, having regard to the statutory purposes for the designations. Where mitigation or other measures need to be taken in connection with the effects on these areas, the outline strategy should set out how these measures are to be implemented and an indicative timetable for implementation. The outline strategy and indicative timetable should be sufficiently developed for RAPID to assess its likely deliverability. We recommend consulting with relevant National Park Authorities, The Broads Authority (where relevant), relevant local authorities and Natural England (England only) or Natural Resources Wales (Wales only) on the strategy.	N/A	The SRO does not impact on any National Parks, The Broads or Areas of Outstanding Natural Beauty.	Main gate 3 report	4.5
		Where a solution is not likely to have an effect on any National Park, The Broads or any Area of Outstanding Natural Beauty, please confirm this in the submission.	Yes			
4.5 Other Environmental Considerations	Biodiversity net gain (England only)	This should support the net gain actions in the Government's 25 year Environment Plan, meet the requirements of the Environment Act 2021 and any national planning policy requirements set out in the NPPF and/ or 12 Planning Inspectorate	Yes	The GUC SRO's high-level BNG strategy aims to outline the drivers to deliver BNG, the scope of the BNG approach, and the constraints to delivery. A full BNG assessment of the GUCT will be completed to support the DCO submission in gate 4. It is intended that	Main gate 3 report Annex C1.3	4.6

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		National Infrastructure Planning website available here: https://infrastructure.planninginspectorate.gov.uk/13 The Planning Inspectorate Advice Notes Advice notes | National Infrastructure Planning (planninginspectorate.gov.uk) Strategic regional water resource solutions guidance for gate three Version 2 National Policy Statement where relevant. It should also satisfy the requirements of any applicable local planning policies.		the BNG strategy is updated throughout gate 4 in order to capture developments and opportunities which may be identified through design changes or non-statutory consultation.		
	Ecosystem resilience and Wellbeing (Wales only)	Where the solution affects Wales, you should consider your duties under the Environment (Wales) Act section 6 & 7 and support delivery of the Well-being of Future Generations (Wales) Act (WFG Act). This includes following the principles of Sustainable Management of Natural Resources (SMNR – Environment (Wales) Act 2016 and the Sustainable Development Principle (WFG Act), maximising your contribution to the four long term aims of SMNR (See Natural Resources Wales / State of Natural Resources Report (SoNaRR) for Wales 2020) and the Well-being Goals (Essentials Guide: Sustainable Management of Natural Resources and our Well-being (gov.wales)). This would contribute to the priorities within the Natural Resources Policy, including	N/A	The GUC SRO is not in Wales, nor interacts with any functionally linked habits that could impact Wales.	N/A	N/A

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		decarbonisation and adaptation to climate change and enhancing biodiversity (which supports the resilience of ecosystems). The requirement of Welsh legislation is set out within the Water Resources Planning Guidance and Env/Society Supplementary Guidance Note for Wales.				
5.Carbon	Solution development to gate three should continue to build from the gate two submissions. In particular, you should continue to follow the Water Resources Planning Guidelines for WRMP24 section 8.3.2 (published on April 2022) which states expectations for accounting for and reducing greenhouse gas emissions. In Wales, expectations are set out in section 3 of the guiding principles (published April 2016) for WRMPs. The following additional guidance should be considered as per the Water Resources Planning Guidelines for WRMP24 section 8.3.2:	• UKWIR (2012) Framework for accounting for embodied carbon in water industry assets (12/CL/01/15) • For carbon costs associated with the projected emissions you should use the latest government guidance on the cost of carbon. In particular you should consider the Green Book Supplementary Guidance • The Carbon Accounting (Wales) Regulations 2018 • Environmental reporting guidelines: including streamlined energy and carbon reporting guidance • PAS 2080: Carbon management in infrastructure • HM Treasury infrastructure carbon review • Towards a science-based approach to climate neutrality in the corporate sector • ACWG Cost Consistency Methodology (August 2020), section 5 • ACWG Carbon Ambition • Water UK's Net Zero 2030 Routemap • Respective company and/or regional commitments	Yes	ST and AfW have committed to achieving net zero operational emissions by 2030, and the Trust is planning to achieve net zero before 2050. In addition to managing operational emissions, the SRO partners recognise the need to work closely with the supply chain to reduce emissions as a result of GUC SRO. The UKWIR Framework for accounting for embodied carbon in water industry assets has been followed, in accordance with the WRMP24. A comprehensive carbon management system (CMS), aligned to PAS 2080:2023 Carbon Management in Infrastructure and Built Environment, is being developed for the SRO. This approach meets key water industry and government policies, and ensures alignment with UK Government's ambition to be net zero carbon by 2050 and the water industry's target to achieve net zero operational emissions by 2030	Main gate 3 report Annex A1	5

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		• Emissions factors for materials and activities taken from ICE CESMM price book and other recognised databases (such as Ecoinvent) • Operational carbon from annual quantities and UKWIR carbon assessment workbook (v16) framework for whole life carbon reducing both operational and embedded emissions in tandem. • The most up to date carbon costs and values as per government guidance (e.g. Valuation of greenhouse gas emissions: for policy appraisal and evaluation). This can be a signpost out to existing work undertaken as part of the WRMP24 development activity, unless there has been a material change in the position. On 6 January 2022, Ofwat published its net zero principles position paper. Solutions should be designed in line with these principles. In particular companies are encouraged to ensure solutions: • are reflective of national government targets on net zero Strategic regional water resource solutions guidance for gate three Version 2 28 • prioritise the reduction of GHG emissions before the use of offsets, doing so in line with the IEMA GHG Management Hierarchy17and; • clearly address both operation and embedded emissions				

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
	Assessments of the whole life carbon cost of the solution Gate three submissions should make clear:	Estimations of carbon costs • The operational and embodied carbon of solutions (in tCO2e). This should be done for all options presented. • How whole life carbon reductions have been considered . • How carbon has been considered in the best value planning approaches, metrics and decision making associated with a proposed solution. • That operational and embedded carbon emissions have been considered as part of the best value assessment. • That due consideration has been given to the seven Kyoto Protocol greenhouse gases. • how relevant policies, frameworks and approaches have been used to consider reductions on carbon emissions. how solutions are embracing innovative designs and opportunities to generate or be powered by renewable energy and/or sequester carbon and explore joint opportunities with other sectors. • whether a focus on carbon reduction has been able to drive down solution costs18. The key emission areas and what opportunities there are for reducing emissions. We expect the submission to demonstrate consideration of Scope 1, 2, and 3 emissions. • how materials have been selected and whether the lowest carbon options have	Yes	AfW's carbon calculator has been utilised to determine construction and operation carbon values for each component of the scheme. The carbon calculator is used to determine embodied and operational emissions from scheme components. GHG emissions are reported in tonnes of carbon dioxide equivalent (tCO_2e). Generic concept designs of scheme components have been measured to generate quantities which have been used to establish scheme carbon estimates. In accordance with the report ACWG Carbon Ambition SRO low capital carbon alternatives, carbon emission 'hotspots' were identified in order to influence the design to reduce carbon.	Main gate 3 report Annex A5	5

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		been considered as part of solution design. It should be made clear why the lowest carbon solutions are not taken forward. • How water companies will work with the supply chain to deliver lower carbon materials where they may not be readily available. • The role of monitoring and reporting due the life cycle of the solution, particularly with a view to ensure transparency and continual improvement				
	Reflecting the governance and environmental needs of Wales	Where the solution is within or affecting Wales, there must be consideration of the Welsh statutory targets to reduce greenhouse gases as prescribed in The Climate Change (Wales) Regulations 2021. The proposal(s) should therefore include an assessment of their carbon impact in Wales from the outset. See section 8.3.2 of water resources planning guidance for more information	N/A	The GUC SRO is not in Wales.	N/A	N/A
6. Programme and Planning	6.1 Project Plan	A clear project-level plan that sets out the key solution-specific milestones to delivery and includes key activities and outputs that need to be undertaken and achieved prior to each subsequent gate should be provided. It should contain sufficient detail to support assessment of progress in relation to delivery incentives (i.e., clarity	Yes	Key solution-specific milestones that need to be undertaken and achieved prior to gate 4 and financial close are summarised in Figure 6.1 of the gate 3 report.	Main gate 3 report Annex E4	6.1

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		around important milestones and interdependencies) and include:				
		The date when the solution is required (based on company and regional plans, as appropriate), and any updates if this changes.	Yes	The WRSE Regional Plan has selected the GUC SRO to help meet the DO requirements of the region from 2033. The preferred strategic resource strategy of the AfW WRMP24 includes the development of the GUC SRO to deliver water into supply for AfW customers in 2032.	Main gate 3 report Annex E4	6.1
		The phasing of key activities and decisions.	Yes	Table 6.1 in the gate 3 report sets out key activities and decisions/outcomes required.	Main gate 3 report Annex E4	6.1
		Summary of all key risks and mitigation plans.	Yes	A summary of the highest scoring risks to the project is shown in Table 6.2 in the gate 3 report, along with mitigation plans. This information is consistent with that shared previously with RAPID in the quarterly dashboard submissions. The highest scoring risk relating to regulatory barriers is the current uncertainty around required parameter concentration in the Minworth SRO discharge and consenting requirements from and within the canal network. The SRO partners continue to liaise with the EA and NAU on this matter, and have raised it with Ofwat given potential implications for investor appetite.	Main gate 3 report Annex E4	6.2
		The assumptions and dependencies within the programme.	Yes	The timing of the GUC SRO programme and key activities are based upon a	Main gate 3 report	6.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
				number of critical dependencies and assumptions, outlined in Table 6.3 and Table 6.4 of the gate 3 report.	Annexes E4, A1	
		Information about construction activities (such as scoping, detailed design, planning route and direct procurement for customers (DPC)).	Yes	The project plan outlines the planning consent route. The SoS has directed that the scheme requires development consent under section 35 of the Planning Act 2008 due to its complexity and infrastructure needs. Therefore, a DCO is necessary. The DPC launch date is crucial to ensure the GUC SRO is operational by 2032. Stronger bidding interest is expected once the DCO outcome is determined, reducing uncertainty. Detailed design will be implemented by the DPC contractor.	Main gate 3 report Annexes E4, A1	6.1, 6.3, 7
		The planned construction start date within the 2025-30 period.	Yes	The planned construction start date is Q3 2029 following financial close on the DPC.	Main gate 3 report Annex E4	6.1
		The earliest possible deployable output date (assuming planning started today) – which might be significantly earlier than the required date.	Yes	The earliest possible DO into supply is 2032.	Main gate 3 report Annex E4	6.1
		An assessment of progress against the project plan that indicates whether or not it is on track. Reasons should be provided for any missed milestones and impacts on the overall programme caused by delays.	Yes	The GUC SRO is on schedule to be construction ready by Q3 2029 (March). To deliver DO from 2033, phased construction is expected to be required, delivering 50Ml/d by 2032 and a total of 100Ml/d by 2033.	Main gate 3 report Annex E4	6.1

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		An estimate of overall project delivery timescales for subsequent gates.	Yes	Gate 4 submission is scheduled for Q1 2027.	Main gate 3 report Annex E4	6.1, 6.4
		Missing information – outline any information that is missing from the project plan and how this will be addressed before gate four.	Yes	Uncertainty around parameter concentration in the Minworth SRO discharge and consenting requirements for the canal network is causing design inefficiencies, negatively impacting PR24, and hindering DPC market engagement. Liaison continues with the EA, NAU, and Ofwat due to potential investor concerns. There is currently a lack of site data (intrusive surveys) due to a single site for water treatment having not been selected in the south. Engagement with landowners is taking place to allow investigations to take place across multiple sites.	Main gate 3 report Annex E4	6.2
	6.2 Key risks and mitigation measures	An assessment of key risks to the solution's planned progress to completion (including requirements at gates) and an assessment of risks to costs and realisation of the benefits of the solution should be provided. This should include consideration of potential regulatory barriers to the solution's progress. The risk assessment should include proposed mitigation measures, which should, where appropriate, have been agreed with relevant regulators and costed in. It should present original risk	Yes	A summary of the highest scoring risks to the project is shown in Table 6.2 in the gate 3 report, along with mitigation plans. This information is consistent with that shared previously with RAPID in the quarterly dashboard submissions. The highest scoring risk relating to regulatory barriers is the current uncertainty around required parameter concentration in the Minworth SRO discharge and consenting requirements from and within the canal network. The SRO partners continue to liaise with the EA and NAU on this matter, and have	Main gate 3 report Annex E4	6.2

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		scores and residual risk scores following mitigation. It must also be consistent with information presented in quarterly dashboards.		raised it with Ofwat given potential implications for investor appetite.		
	6.3 Proposed gate four activities and outcomes	Solution owners should propose dates for gate four onwards aligned with the solution project plan. Those solutions which are required to be construction ready earlier should propose an earlier gate four date. Those planned for later in the 2025-30 period should propose later gate dates.	Yes	Proposed dates for critical gate 4 activities are outlined in Table 6.5 in the gate 3 submission. These activities align with the GUC SRO project plan. This is not intended to be an exhaustive list of all work to be undertaken in gate 4 (Q2 2025 to Q1 2027) and includes 'early start' items (Autumn/Winter 2024 and early 2025).	Main gate 3 report Annex E4	6.4
		By gate four, solution owners should have submitted applications for DCO or planning permission for a firm single solution, including location, as included in final regional plans and WRMPs.	Yes	The DCO application for a firm single solution is scheduled for submission in Q4 2026. Gate 4 submission is scheduled for Q1 2027.	Main gate 3 report Annex E4	6.1
		We expect companies to have tested their design through a digital twin. Procurement and commercial arrangements should be sufficiently progressed to enable construction to begin at the construction-ready date. The starting point for gate four activity proposals should be the list of activities included in the PR19 final determinations water resource solutions appendix.	Yes	There has been a significant amount of work undertaken through gate 3 which is creating the building blocks of a digital twin for the scheme. The focus has been on identification of the desired outcome from a digital twin, and how it will contribute to GUC SRO operating and utilisation scenarios. The Aquator software platform model of the GUC has been developed to gain a better understanding of the way in which outages along the GUC SRO would affect	Main gate 3 report Annex A4	2.9, 6.4

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
				the water available for use within AfW's central area.		
		Solution owners should set out proposals for gate four activities and outcomes, depending on whether they are on preferred or alternative pathways, penalty scale, assessment criteria and contributions. This should include explicit consideration of solution delay impacts.	Yes	The WRSE Regional Plan has selected the GUC SRO to meet the region's DO. In AfW's WRMP24, the preferred water resource strategy includes the development of the GUC SRO to supply water to AfW customers from 2033. Gate 4 activities are planned to achieve these objectives. Expert support is engaged to mitigate DCO application delays, and close engagement with the NAU is managing potential delays in obtaining discharge and abstraction consents.	Main gate 3 report Annex E4	6.4
6.4 Planning and Land	An updated land and planning strategy for the solution should be provided. This should cover:	An explanation of the preferred planning route for the solution and the key planning steps. Where a section 35 direction is required under the Planning Act 2008, this should have been applied for and received by gate three and prior to starting the pre-application stage of the DCO process. If this has not been done, an explanation of the delay (including events outside solution owners' control), risk mitigation, the timetable for achieving it, and how this fits in the overall programme plan	Yes	The SoS has determined that the scheme should be treated as a development for which development consent is required through issue of a direction under section 35 of the Planning Act 2008 due to its complexity and substantial infrastructure works, and the need for multiple powers and consents.	Main gate 3 report Annexes E4, C1.3, C2.1	6.1, 6.5
		Where solutions may have cross-border impacts or capital works, the preferred planning route should consider whether Welsh planning policy or bodies should be included, and consult with Planning and	N/A	The GUC SRO is not in Wales.	N/A	N/A

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		Environment Decisions Wales (PEDW) as appropriate.				
		Progress made in pre-application non-statutory and statutory consultations and in preparing applications for a DCO or planning permission including supporting documents	Yes	The following key activities have already been completed: • A s.35 direction has been sought and obtained from the SoS. • The pre-application stage of the DCO has commenced with PINS. • DCO pre-application engagement has commenced with the Local Planning Authorities (LPAs) and prescribed consultees. • Non-statutory consultation on the project. Non-statutory consultation from 11 September to 25 October 2024 aimed to raise awareness of the GUCT, broaden knowledge of the project, and invite early feedback. Statutory consultation is likely to follow a similar approach, with the current timing planned for Autumn 2025.	Main gate 3 report Annex E1	9.1, 9.3, 9.4, 9.5
		The plan for obtaining other regulatory consents needed for construction and operation. This should include a high-level summary of the consents needed (i.e. types of consent) and indicative application timings. For solutions utilising the DCO process, the submission should indicate if there are any consents that must be obtained outside of the DCO, briefly explain how you will gain those	Yes	The DCO process enables land acquisition, along with many other consents and powers, to be dealt with at the same time. The DCO application may need to be supplemented by other applications because: • Some specific consent cannot be obtained in the DCO. • A consenting authority may decline to allow a consent to be obtained through the DCO.	Main gate 3 report Annexes E4, C1.3, C2.1, E1	6.1, 6.3, 6.5, 7, 9.5

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		consents and indicate how they fit in the overall programme plan.		• It is not desirable, or it is inappropriate to include a consent within the DCO due to the stage of design development and the level of detail available. Annex C1.3 (Planning and Consents Strategy Report) outlines the various secondary licenses and consents that may be necessary for the GUCT.		
		The land lifecycle, including the strategy and plan for effectively delivering it and explaining how the approach will support the effective and efficient delivery of planning consent, acquisition of required land and rights over land, and delivery of the programme.	Yes	Land referencing identifies affected land and interested parties. Initial desktop referencing supports EIA scoping surveys, with formal contact referencing post-design freeze before statutory consultation. This involves questionnaires to title holders to confirm ownership and details, reviewing titles for restrictions, and investigating unregistered land ownership.	Main gate 3 report Annexes E4, C1.3, C2.1, E1	6.1, 6.3, 6.5, 7, 9.5
	This should include:	An explanation of the part, if any, to be played by compulsory purchase as a tool for delivering the required land and rights over land on time and in budget.	Yes	The land strategy outlines that the preference, where possible, is for voluntary acquisition. However, the DCO will seek authorisation for compulsory acquisition (CA) of land and rights for the new WTW, storage, canal assets, and pipeline transfers where needed.	Main gate 3 report Annexes E4, C1.3, C2.1	6.5
		Where compulsory purchase powers are to be made available, the legal vehicle for their availability (compulsory purchase order, DCO etc), the statutory compulsory purchase powers that will be relied upon, the circumstances in which the powers will be used to acquire land and rights over land and the timing of their use must be included.	Yes		Main gate 3 report Annexes E4, C1.3, C2.1	6.5

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		You must also outline the steps that you will take to attempt to acquire the necessary land and rights over land by agreement, in advance of any compulsory purchase powers being applied for and used. Recognising that the availability of compulsory purchase can be a useful way of ensuring deliverability of projects and acquisition of land and rights over land at an objectively fair price, if compulsory purchase powers are not to be made available, the justification for their absence must be set out	Yes		Main gate 3 report Annexes E4, C1.3, C2.1	6.5
		An explanation of how the strategy relates to a common methodology (agreed with other water companies and/or other infrastructure promoters) for acquiring land and rights in land on large projects including a common approach to compensation policies	Yes	Land referencing precedes survey access arrangements with landowners and occupiers, covering a broader area than needed for construction. Non-intrusive survey rights will be secured via voluntary agreements, with statutory powers if necessary. For intrusive surveys, like ground investigations, licence agreements will be sought first, using statutory powers of entry if agreements can't be reached.	Main gate 3 report and Annex C2.1	6.5
		Explanation of how you are managing the land and planning process, including providing assurance that you have (or will have) adequate systems and resources and that there are effective and efficient processes and governance arrangements	Yes	The DCO process allows for land acquisition and other consents and powers to be handled simultaneously. Issues with property rights can impact on programme and cost. The SRO partners aim to ensure adequate systems and through engagement of expert support in the management and implementation of land and planning processes.	Main gate 3 report Annexes E4, C1.3, C2.1	6.5

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		An explanation of how you are proposing to manage the "journey" for all those who will be directly affected by the construction and operation of the solution, and how solution owners will continue to ensure a good experience for them.	Yes	Detailed discussions post-consultation and post-design freeze will consider landowner constraints and reduce the risk of new issues during statutory consultation. Special Category Land, including National Trust land, requires careful review due to it holding significant public interest and value. Engagement with key landowner groups, such as Crown/Special Category Land and land requiring freehold acquisition, will occur before statutory consultation. Prior to statutory consultation, engagement will have taken place with all landowners/ occupiers.	Main gate 3 report Annexes E4, C1.3, C2.1, E1	6.5, 9.5
		The key risks and issues relating to land and planning and explaining how the strategy supports the management/mitigation of the risks. This may require the solution owner to provide us with information that is commercially sensitive where it identifies a material risk or issue to the delivery of the solution. In such a situation, this information can be redacted or removed from the published submission documentation, subject to the position on access to information set out in paragraph 1.5 above.	Yes	Issues with property rights can impact on programme and cost. This risk is being mitigated through engagement of expert support in the management and implementation of land and planning processes. There is currently a lack of site data (intrusive surveys) due to a single site for water treatment having not been selected in the south. Engagement is ongoing with landowners to allow investigations to take place across multiple sites.	Main gate 3 report Annex E4	6.2
	In addition, the submission should provide:	An update on work done to date to support the proposed land and planning process, including the outcome of pre-planning application activities, and how this has	Yes	Key land and planning activities completed are listed below: • Obtained a s.35 direction from the SoS.	Main gate 3 report	6.5, 9.1, 9.2, 9.3, 9.4

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		affected the land and planning strategy for the solution.		• Commenced the DCO pre-application stage with PINS. • Started DCO pre-application engagement with LPAs and prescribed consultees. • Conducted non-statutory consultation on the project. • Introductory briefings and technical working groups with stakeholders have informed the project's development, influencing the planning strategy and scheme for non-statutory consultation.	Annexes E4, C1.3, C2.1, E1	
		A breakdown of estimated costs included in the solution cost estimate for acquisition of land rights and compensation and the likely timing of this expenditure; the level of risk around these costs; and explain the basis for the estimates.	Yes	At this stage of the project, it is not feasible to provide a detailed breakdown of the estimated costs for acquiring land rights and compensation. However, we will ensure full compliance with relevant updated guidance on the power of compulsion. Payments for acquired rights will follow a Payment Schedule for New Rights, which is to be produced to ensure that the acquisition process is conducted fairly, transparently, and in accordance with legal requirements.	Main gate 3 report Annexes E4, E3	6.5, Table 11.2
7. Procurement and Operation Model	Following gate two submissions we expect companies to continue to develop the procurement arrangements for the project and present an updated procurement strategy.	Where a competitive delivery model such as Direct Procurement for Customer (DPC) or under the Specified Infrastructure Project Regulations (SIPR) was identified at gate two as the preferred procurement route, companies are required to follow Ofwat's DPC process.	Yes	Section 7 of the gate 3 submission explains the procurement route for the GUC SRO in greater detail. It is understood that the project will be procured by DPC, in which a third party may operate and maintain the system.	Main gate 3 report Annexes E4, C1.3	7.1, 7.2, 7.3, 7.4, 7.7

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		By gate three we expect companies to have submitted and had accepted by Ofwat the DPC stage 1 and stage 2 submissions except: Where RAPID projects have successfully completed RAPID gate two and addressed all relevant actions in relation to procurement, we do not require a separate DPC stage 1 submission to be provided.	Yes	GUC SRO has complied with this guidance.	Main gate 3 report	7.2, 7.3
		We also do not require the information submitted in the DPC submissions to be resubmitted as part of the gate. Where things have significantly changed between the achievement of the above DPC submissions and the RAPID gate three submission, provide a summary of the changes (and their driver); and an overview of the revised commercial structure and risk allocation.	Yes	Changes since the stage 1 DPC submission in February 2024 include: • Adding Daventry and Drayton Reservoirs to the project scope to mitigate potential impacts from HoF restrictions on the River Trent. • Revisiting the canal abstraction location and the siting of raw water storage and the new WTW. • Revising the programme based on early market engagement, with support for staggering the DCO and DPC processes to provide more certainty to bidders. • Updating cost information to reflect ongoing scheme development between RAPID gate 2 and 3 submissions.	Main gate 3 report	7.2, 7.3
		In addition, provide the following within the submission initial draft heads of terms for the CAP agreement as well as those between the project partners and where appropriate other third parties.	Yes	Through the stage 2 process, the SRO partners have been working to draft heads of terms for a BSA, a supply agreement for the Trust, a tripartite operational	Main gate 3 report	7.2, 7.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
				agreement, and a CAP contract for the GUC SRO DPC. Draft heads of terms of these documents were provided to Ofwat and its partners in advance of the formal stage 2 submission.		
	Where the solution has previously not been identified as suitable for delivery under DPC or SIPR and it has been agreed by Ofwat that it is not suitable for delivery via DPC or SIPR, please provide an updated procurement strategy for the project setting out:	The preferred procurement route/procedure with rationale for approach.	N/A	The GUC project is following the DPC approach.	N/A	N/A
		An explanation of the commercial strategy – including a high-level approach to risk allocation and incentives at a company and contractor level and initial draft heads of terms between the relevant parties (including between the water company partners, any third parties as well as between the company and contractor).	Yes	Current minded to position on contractual arrangements for construction are: • Canal assets – Design, Build & Finance (DBF). The Trust will operate and maintain all the assets built along the canal, given its expertise and statutory duty to maintain canal assets. • Abstraction, Storage, Treatment and Pipeline – All the new assets from the WTW at the southern end of the canal transfer to delivery of water to an underground reservoir near Luton have the potential to be implemented under a Design, Build, Finance, Operate & Maintain (DBFOM) model, pending regulatory, financial and operational acceptability.	Main gate 3 report Annex A6	7.3

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
				This structure will be further considered as a result of market engagement with selected potential bidders and their partners. Developing full details of the risk allocation (including customers, CAP and Appointee as appropriate), including proposed Appointee incentives, is an ongoing activity which will form part of the stage 3 deliverable, in line with the Ofwat DPC guidance		
		A summary of market engagement exercises that have been undertaken and feedback received showing (amongst other things) market appetite, supply chain availability, and views on proposed commercial arrangements.	Yes	The project team engaged with various contractors, investors, and debt-providers. Key insights were gained on: • DBF vs. DBFOM, timelines, and DPC commencement • Output/outcome specifications vs. defined design specifications. • Innovation scope and reducing whole-life costs. • Value for money of large residual value bullet payments. • Lending appetite and views on Ofwat's risk allocation. All parties showed interest, citing the project's manageable size, environmental benefits from canal reuse, and innovation opportunities.	Main gate 3 report Annex E4	7.4
		An updated detailed procurement timetable, with an explanation of how it supports the overall critical path including	Yes	A detailed procurement timetable is shown in Figure 6.1 of the gate 3 report.	Main gate 3 report Annex E4	6.1, 7

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		highlighting any dependencies and how risk of delay may be mitigated.				
		An explanation of how the procurement route and commercial strategy will maximise competition and deliver best value for customers.	Yes	The SRO partners are looking to maximise competition through presenting an attractive as possible project to the market. Some of the important considerations to ensure this project will appeal to the market are listed below: • Proactive promoting of the Project and keeping the market informed. • Highly regarded financial, legal, and technical advisers employed. • Minimizing risk of Ofwat's decision on DPC proceeding. • Planning permission already obtained. • All land acquired or clear steps to secure it. • Clear, standardized contract requiring limited legal review. • Complete ITT package. • Clear allocation of responsibilities. • Unambiguous output/outcome specifications. • Sensible evaluation process.	Main gate 3 report	8.2
		An assessment of risks and issues associated with the preferred delivery route.	Yes	Section 8.5.1 of the DPC stage 2 report details the issues and risks associated with the preferred delivery route.	Main gate 3 report Annexes E4, C2.1, C1.3, A1	6.2, 6.5

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
8. Solution Cost and Benefits	At gate three, solution owners should present updated key cost information provided at gate two for the preferred option with reduced uncertainty in costs and benefits and an explanation of any material change in costs, including where optimism bias has been reduced as costs firm up.	Overall costs of construction and operation for the preferred option and options that have been discarded in order to demonstrate that the preferred option is best value.	Yes	Table 8.1 in the gate 3 report gives the overall costs of construction and operation for the scheme, including each of the shortlisted options and costed options that have been discarded.	Main gate 3 report Annex A1	2, 8
		Detail of capital expenditure.	Yes	A further breakdown of the cost estimates is given in Annex A (Design Report).	Main gate 3 report Annex A1	8.3
		Detail of operating expenditure - include an indication of design life of the asset and any significant maintenance liabilities during operational life.	Yes		Main gate 3 report Annex A1	8.3
		Optimism bias.	Yes		Main gate 3 report Annex A1	8.1
		Assumptions and exclusions.	Yes	At this stage of the project, the cost of environmental and water quality mitigations and scheme benefits are not included in cost estimates. These requirements will be developed in gate 4, following confirmation of the preferred solution established through pre-planning statutory consultation.	Main gate 3 report Annex A1	8
		Cost of all environmental and water quality mitigations should be included.	Yes		Annex A1	8
		An indication as to whether solution costs are in line with relevant methodologies	Yes	The cost estimates prepared for the scheme at gate 2 and gate 3 used the	Annex A1	8.1

Guidance reference	Overview of expectation	Sub-reference and detail of expectation	Addressed ?	Description and/or rationale for GUC SRO	Report and Annex	Section reference
		agreed with regulators and relevant green book guidance.		ACWG methodology and relevant Green Book guidance. They therefore contain a standardised optimism bias (OB) that will reduce as certainty increases in gate 4.		
		Cross-comparison of updated solution costs as tested in regional or national modelling.	Yes	A gate 3 solution cost template is given in Annex A1 (Design Report) and presents the cost profile information.	Main gate 3 report Annex A1	8.2, 8.3
		Clear description of where solution cost scalability moves from marginally more expensive to substantially more expensive (tipping points).	Yes	The SRO partners provided WRSE with multiple costed options, including a phased option to build in two parts. The revised draft WRSE Regional Plan has selected the GUC SRO as being required as a single 115Ml/d (capacity) phase.	Main gate 3 report Annex E5	2.9
		Solution owners should complete and provide the template developed by the All Company Working Group (ACWG), consistent with the cost profiles information included within the WRMP24 Table 51920 , as an annex. Cost profile information includes capex, opex, financing cost, optimism bias, costed risk, discount rate, as well as fixed and variable opex and capex unit costs. Solution owners must ensure that the costs of any proposed mitigations to identified risks are included in the reported costs of the solution.	Yes	WRMP24 tables are available on the AfW website. The PR24 submission, table CW8, includes the additional breakdown required as per this section of the Gate 3 guidance.	Affinity Water WRMP24	
		Solution owners can reflect on costs uncertainty and volatility given changing input prices such as energy, and can	Yes	The main change in CAPEX estimates from gate 2 is due to updating the price base from 2022 to 2024 and increased	Main gate 3 report Annex A1	5.2, 8.3

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		discuss these in checkpoints in the run up to gate three submission.		sizing of discharge and bypass structures, along with more bank raising as a result of detailed hydraulic modelling in gate 3. OPEX cost variance is due to the updated electricity cost rate from £[redacted]/MWh at gate 2 to £[redacted]/MWh at gate 3, and added pumping costs for diverting flows from the canal at Braunston to Daventry and Drayton Reservoirs.		
		For the each of the cost components contained within the ACWG cost template, solution owners should provide a comparison of the value submitted at gate two and the updated value for the preferred solution at gate three.	Yes		Main gate 3 report Annex A1	8.3
		Solution owners should also discuss the cost-effectiveness of the preferred option relative to the other options considered at gate two.	Yes	As part of this shortlisting process, it was determined that the site identified in gate 2 near Leighton Buzzard (Site F) was no longer suitable for the scheme, due to a number of constraints identified through the evaluation and consultation process.	Main gate 3 report Annex A1	8.2
		Solution owners should also fill out the template provided by RAPID requesting solution design and cost information.	Yes	Submitted as part of PR24 (Expenditure by AMP table, titled CW8).	Affinity Water PR24 submission	CW8 data tables
		When solution owners publish their gate submission, they should include all costs information unless it is information that has been redacted in WRMP24 tables in line with the instructions to complete those tables. These instructions provide for publication of water resource planning tables to help regulators, water company customers and other organisations understand and appraise the plan. They provide that the only information that should be redacted is information that the Secretary of State or Welsh Ministers have	Yes	Cost information presented as required in the Efficiency of Expenditure annex.	Main gate 3 report Annex E3	11

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		determined to be commercially confidential under section 37B(2) of the Water Industry Act 1991 and information where its publication would be contrary to the interests of national security.				
8.1 Best Value and solution benefits	The aim of the WRMP and regional planning process is to develop and present a best value plan both in the short and long term and to select the best value programme of solutions, including strategic and non-strategic options. As explained in the introduction and solution design sections of this guidance, the choice of whether a solution should be implemented is not made within the RAPID gated process. This decision is taken within the regional plan and WRMP process.	The RAPID process draws on the assessments in the regional and company plans regarding best value considerations. Therefore, the gate three submissions should include a summary of the best value considerations relevant to the preferred option for each solution included in all the individual company WRMPs and regional plans where the solution appears. This should include the consideration of financial cost and how it will achieve an outcome that increases the overall benefit to customers, the wider environment and overall society. Benefits to consider could include any amenity or recreation value, regional economic impact, multisector benefits, and other societal benefits.	Yes	AfW collaborated with WRSE to develop its WRMP24, using WRSE's modelling and assurance framework. The final WRMP24 aligns with the WRSE Regional Plan, which evaluates best value metrics such as cost (NPV), carbon emissions, and environmental impact. As agreed with RAPID during gate 3 (GUC & Minworth SROs meeting with RAPID 21/05/24 and 31/07/24) we reference Chapter 9 of AfW's WRMP24, which outlines the best value plan, including the development of a 100 Ml/d (DO) GUC SRO transfer.	Main gate 3 report	2.11, 5.1, 8.2
	Gate three submissions should clearly present a summary of the following:	Which best value metrics have been applied to the solution within regional plans and individual company WRMPs. Any differences should be identified and explained.	Yes		Main gate 3 report	8.2
		A summary of the best value metric evaluation outcomes include: • Weights and scoring applied	Yes		Main gate 3 report	8.2

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		• Non-monetised and monetised (where possible) best value benefits consistent with WRMP24 Table 5 for the solution within each company WRMP and regional plan where the solution appears • Any significant differences in best value evaluation outcomes for the solution between plans should be identified and explained • Any changes from the gate two submission with respect to the above bullets should be clearly highlighted and explained.				
		Evidence that approaches used for scoring and weighting metrics are consistent with those used within associated WRMPs and regional plans.	Yes		Main gate 3 report	8.2
		An explanation of how the solution features within each WRMP and regional plan that it is included in. The explanation should clearly identify whether it appears in preferred or alternative pathways and the timing of its selection.	Yes	In AfW's WRMP24, the preferred water resource strategy includes the development of the GUC SRO, to deliver a DO of up to 100Ml/d from 2033. The WRSE Regional Plan has selected the GUC SRO to meet the region's DO.	Main gate 3 report Annexes E1, E4, A1, C1.3	2.3, 2.4, 2.10, 4.4, 6.1, 6.4, 8.3, 9.1, 10.2
9. Stakeholder and Customer Engagement	By gate three submission, solutions should have completed non-statutory consultation, and be undertaking statutory pre-	Pre-planning statutory consultation as outlined in as described in The Planning Inspectorate Advice note 11 and Annexes A-H21.	Yes	Non-statutory consultation from 11 September to 25 October 2024 aimed to raise awareness of the GUCT, broaden knowledge of the project, and invite early feedback. Statutory consultation is likely	Main gate 3 report Annex E1	9

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	planning consultation for DCO solutions, or planning application and permission. Solution owners should begin engagement with all relevant statutory bodies as early as possible to de-risk solutions and ensure opportunities are not missed. Gate three engagement should include:			to follow a similar approach, with the current timing planned for Autumn 2025.		
		Plans showing ongoing and continued engagement, that have been shared with public and statutory bodies, including any required enhanced advisory services.	Yes	Customer engagement for gate 2 delivery included views on changing source water, considering various evidence and co-chairing a national Water Recycling Communication Group for consistent messaging. The gate 2 report emphasised that gate 3 should focus on communities and stakeholders affected by the scheme, with additional customer engagement planned for gate 4. These insights are shaping the gate 4 engagement plan for AfW customers receiving the new water source from 2033. While direct engagement on the source change eight years in advance is premature, plans are detailed in Section 11, with ongoing engagement for communities and stakeholders leading up to the statutory consultation planned for Autumn 2025.	Main gate 3 report Annex E1	9
		Customer engagement, particularly on changes of source where relevant.	Yes		Main gate 3 report Annex E1	9
		Engagement with all stakeholders affected by the solution's development.	Yes		Main gate 3 report Annex E1	9.2, 9.3, 9.4

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		Solution submissions should also describe specifically what stakeholder concerns have been raised in representations to date (including representations on the draft decisions at the previous gate) and how they have been addressed at gate three or will be addressed at future gates	Yes	A total of 780 people attended 15 non-statutory consultation events, and 463 responses were received. A high-level summary of key themes is given below: • Northern section – concerns regarding visual impact of above ground components and concerns regarding pipeline routing, disruption and timing issues. • Canal - General support for the scheme, but concerns include outfall risks, impacts on canal users and businesses, flow effects on infrastructure, and visual disruptions. Location-specific issues were also raised. • Southern section - Challenges include site identification, housing impact, environmental concerns, and community issues like visual impact and access, with feedback aligning with local authorities. More granular analysis is given in Annex E1 (Stakeholder Engagement Report).	Main gate 3 report Annex E1 (Stakeholder Engagement Report)	9.4
		Concerns can be allayed by water companies engaging with stakeholders and customers at an early stage, before any changes are made to their supply. This engagement should highlight any potential changes to their supply, clearly explain why this is happening and whether this will be a permanent, intermittent, or temporary change.	Yes		Main gate 3 report Annex E1	9.5
10. Board Statement and Assurance	At gate three, an assurance statement should be provided from the Board of each solution owner, in its own words	Statements for solutions should confirm that the Board of each solution owner is satisfied that each solution owner has undertaken sufficient assurance and due diligence and the Board is therefore confident in making the following statements:	Yes	The board statements are provided in the covering letter to this gate 3 submission. The boards of ST, AfW and the Trust support the recommendation for progression of this SRO. The views of the	Main gate 3 report Annex E2	10.1, cover letter

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		it supports the recommendations for solution progression made in the submission at gate three and the recommendations for which option within the solution should be progressed.	Yes	boards are aligned, as evidenced by their respective statements.		
		it is satisfied that a realistic and achievable programme for the solution is in place, there are no insurmountable obstacles to the delivery of the solution in accordance with that programme and that progress on the solution at gate three in accordance with that programme is commensurate with the solution being “construction ready" for 2025-2030.	Yes			
		It is satisfied that all significant risks to the delivery of the solution in accordance with the programme and within current cost projections have been identified and that those risks are managed well.	Yes			
		It is satisfied that the work carried out at gate three is of sufficient scope, detail and quality to ensure that applications can be made for development consent orders, planning applications and other necessary statutory consents and permits in accordance with the programme and the work carried out at gate three is commensurate with the solution being “construction-ready” for 2025-2030.	Yes			
		It is satisfied that expenditure has been incurred only on activities that are	Yes			

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		appropriate for gate three and is efficient and cost effective.				
		Assurance statements should be signed by the Board or on behalf of the Board. Where an assurance statement is signed on behalf of the Board it should be clear that the person signing the statement has delegated authority to sign on behalf of the Board.	Yes	The assurance framework, developed jointly by ST and AfW, follows a risk-based approach consistent with their reporting standards and Ofwat's requirements. It uses a 'three lines of assurance' model, with higher-risk areas receiving more scrutiny. An external assurer confirmed the submission's suitability for gate 3. The board supports this, with no outstanding issues, and plans to refine the approach for gate 4 after a lessons-learned exercise.	Main gate 3 report Annex E2	10.2
		The assurance statement(s) should clearly set out the evidence, information and external and/or internal assurance that the Board has considered in providing assurance. This should be explained separately for each of the five points of the statement. Joint solutions will require supporting statements from all partners' Boards.	Yes			

Grand Union
Canal Transfer