SRO - STT Project

J697-ARS-XXXX-XXXX-RP-CS-100001
STT Interim Cost Report

Revision: C02
Status: A - Authorised and Accepted

Date: July 2026

Delivered in Partnership by

Revision Control

Revision	Status Code	Description of Change	Originator	Checked	Reviewed	Approved	Date (DD/MM/YYYY)
P01	S5	Issue for acceptance	ALR	SF	JH	MH	21/05/2026
P02	S5	Incorporating final Partner Company comments	ALR	SF	JH	MH	02/06/2026
C01	A1	Finalised with updated disclaimer	ALR	JH	HW	MH	01/07/2026
C02	A1	Finalised with public classification	ALR	JH	HW	MH	03/07/2026

This document is uncontrolled when printed. Please ensure you are using the latest version.

Disclaimer

This document has been prepared and published jointly by Thames Water, United Utilities and Severn Trent Water for general informational purposes only. The contents of this document are based on solutions, methodologies, and data available at the time of preparation. The findings and conclusions presented reflect the information current at that time.

This document has been developed with reference to legislation, regulatory requirements, and environmental laws and standards in force as at the date of publication. Changes in legislation, regulatory frameworks, or environmental standards after this date may impact the accuracy, applicability, or completeness of the information provided.

Risk items identified within this document have been determined through an internal assurance and review process. Such assessments are inherently subject to uncertainty, and all quantitative estimates provided should be considered indicative only, with industry best practice tolerances as referenced.

While reasonable care has been taken in the preparation of this document, Thames Water, United Utilities and Severn Trent Water make no representations or warranties, express or implied, regarding the accuracy, completeness, or suitability of the information. To the fullest extent permitted by law, Thames Water, United Utilities and Severn Trent Water accept no liability for any loss or damage arising from reliance on this document or its contents.

Classification - Public

This document has been approved for release into the public domain by Thames Water, United Utilities and Severn Trent Water.

Table of Contents

List of Tables

List of Appendix Tables

List of Figures

List of Appendix Figures

No table of figures entries found.

1 Position Statement

1.1.1 This document has been prepared to provide a consolidated and up-to-date view of the evolving cost position for the River Severn to River Thames Transfer (STT) Strategic Resource Option. It is intended to act as a single, consistent source of current cost information to support ongoing regional planning, scheme sensitivity modelling, and Gate 3 decision-making should the project be triggered into full development. A letter[1] was issued to RAPID communicating the expected change in Gate 3 date given STT remains on the adaptive pathway, with a response[2] published 11th May 2026.

1.1.2 The update reflects work undertaken by the Partner Companies, consisting of Thames Water (TW), United Utilities (UU) and Severn Trent (ST), to refresh cost estimates following the Gate 2 submission in 2022. The outputs will inform Water Resources South East (WRSE) modelling and sensitivity analysis; as well as the Thames Water Annual Review (AR25) process.

1.1.3 The STT scheme remains at an early stage of development relative to comparator options such as the White Horse Reservoir. While elements of the design have been progressed beyond Gate 2, including initial Gate 3 development activities, the overall scheme is still at a mixture of feasibility and concept design level. As such, the cost estimates presented here reflect an interim position based on an evolving understanding of scope, integration requirements, and delivery constraints, rather than a fully optimised or investment-ready solution.

1.1.4 The estimates have been produced through the coordinated input of the three Partner Companies, with Thames Water providing an assured third line of defence (LoD3) capital cost estimate for the Interconnector, United Utilities providing benchmarked indicative trading charges for North West Transfer source elements, and Severn Trent providing LOD3 trading charge-based estimates for the Minworth and Netheridge source elements.

1.1.5 Since Gate 2, there has been a significant increase in the estimated cost of the scheme, particularly in relation to the Interconnector, driven by a more comprehensive understanding of scope, revised construction assumptions, and substantially higher allowances for indirect costs, risk, and optimism bias. Cost increases are not limited to direct construction; material uplifts have also been identified in preliminaries, design and delivery costs, and client-side risk provisions. These changes reflect both improved definition of the engineering solution and recognition of the uncertainties inherent in a scheme of this scale and complexity at its current stage of maturity.

[1] https://www.ofwat.gov.uk/wp-content/uploads/2026/05/2026-04-30-Letter-to-RAPID-STT-Changes-since-Gate-2-submission-Final-Signed-16.04.26-redacted.pdf
[2] https://www.ofwat.gov.uk/wp-content/uploads/2026/05/2026-03-31-draft-response-to-STT-letter-update-on-progress-since-gate-2-redacted.pdf

1.1.6 A key development since Gate 2 is the transition in how certain scheme elements are represented financially. Costs provided by United Utilities and Severn Trent are now expressed as indicative long-term trading charges rather than capital and operational expenditure. This represents a shift toward whole-life costing aligned with WRMP modelling approaches but introduces limitations in direct comparability with previously published Gate 2 estimates. It is important to recognise that these trading charges are indicative only, based on current assumptions over long-term contract periods, and do not constitute commercial offers.

1.1.7 The purpose of this document is to support comparative assessments of STT alongside alternative strategic resource options through sensitivity testing and regional modelling. It does not represent a final cost position, preferred option, or investment decision. The estimates remain subject to uncertainty due to design maturity, environmental and regulatory considerations, evolving assumptions, and include appropriate allowances for risk and contingency.

2 Executive summary

2.1 Purpose of this paper

2.1.1 This paper has been prepared as a ‘single source of truth’ of current estimates for the Severn to Thames Transfer (STT) Strategic Resource Option (SRO) undertaken from February to April 2026. A cost update was instigated in 2025 to summarise the latest cost position of STT given the length of time which has passed since Gate 2 in 2022 and the significant time to go before a Gate 3 should STT be triggered into full development. The revised indicative cost estimate for STT is produced on behalf of the three STT Partner Companies and is to be used by TW to assess whether the White Horse Reservoir (WHR) remains as the preferred scheme when comparing cost (best value metrics remain unchanged from WRMP24). It supports comparison (whilst noting the differing levels of design maturity between the schemes) to the WHR Gate 3 cost, through the sensitivity analysis being undertaken by Water Resources South East (WRSE) to inform TW's Water Resources Management Plan (WRMP) Annual Review 25 (AR25).

2.1.2 For the avoidance of doubt, the figures contained in this report provided by UU and ST are indicative estimates and do not form a commercial offer. These figures will also be subject to change as the scheme develops through the RAPID gated process. The published Gate 2 figures of proposed solutions were presented as CAPEX and OPEX costs. At this current interim update stage, the figures for UU and ST are presented as indicative trading charges which is the required input data format for WRSE modelling.

2.2 Scope of STT

2.2.1 The STT system is an adaptive, multi-scheme SRO enabling raw water transfer from the River Severn to the River Thames, using an Interconnector pipeline and supporting sources comprising of the North West Transfer SRO, Severn Trent Sources (STS) SRO and Minworth SRO.

2.2.2 STT and WHR are at different levels of scheme maturity. STT remains on the adaptive pathway and is therefore developed to a much lower level of maturity when compared with WHR as the preferred scheme with a greater level of design definition. WHR also has less complex configuration, interface dependencies, consenting and delivery arrangements than STT. There are material risks still present in STT which will be further evaluated through the RAPID gated process.

2.3 Basis of STT estimate interim update

2.3.1 The STT Technical Partner (TP) has collated the revised cost estimates and indicative trading charges from four sources;

2.3.2 TW has provided a LoD3 assured CAPEX cost estimate for the construction of the Interconnector at 500Mld (as the preferred adaptive scheme) with all associated assets.

2.3.3 UU has used benchmarked cost estimates to inform indicative trading charges for the provision of the North West Transfer options of up to 180Ml/d from Vyrnwy. The estimates from UU provide cost increments as flows increase from 25 to 180Ml/d.

2.3.4 The estimate for the Vyrnwy Bypass is provided on behalf of the three partner companies, and is a CAPEX estimate which remains as per the estimate provided at Gate 2.

2.3.5 ST has provided assured trading charges for the provision of a 115Ml/d pipeline from Minworth and the 35Ml/d flow from Netheridge. The LoD2 assured estimates have been included within this paper which are the figures provided for the WRSE submission. LoD3 assured estimates were subsequently provided which are included in the Appendix of this report along with the stated minor deviations from LoD2 figures.

2.4 Thames Water Interconnector – Key Headlines

2.4.1 The current Interconnector CAPEX estimate for the 500Ml/d option has increased from Gate 2 by +£2.60bn, which is an increase of 164%. This is summarized in Table 2.1.

Table 2.1 Thames Water Interconnector CAPEX Summary

Gate 2 CAPEX (22/23 Prices) £	Current CAPEX (22/23 Prices) £	Delta £	Delta %
1,587,631,626	4,192,242,667	+ 2,604,611,041	+ 164%

Source: Thames Water

2.4.2 The reasons for this delta are set out below:

2.4.3 Total CAPEX has increased reflecting a substantially revised understanding of scope, risk and delivery requirements. Direct construction costs increased by £551m, driven by scheme definition, updated estimates, materially higher shafts and crossings costs (due to updated design and assumptions regarding construction methodology and diameters for 70 crossings and associated shafts) and inclusion of previously under-represented scope such as haul roads, wider easements, environmental mitigation and utilities power supply.

2.4.4 Contractor preliminaries, design and fees increased by £556m, following Programme Partner assurance and adoption of bottom-up, benchmarked allowance levels aligned to scheme scale, duration and risk profile. Client indirect costs, risk and optimism bias increased materially (c. £1.2bn combined), reflecting low scheme maturity, change in the basis of uncertainty

and risk calculations and revised application of All Company Working Group (ACWG) aligned optimism bias.

2.4.5 TW Corporate Overhead increased to 11% (from 8%), adding c. £293m, reflecting updated corporate overhead allocation for SRO applied to a higher base cost.

2.4.6 The outcome from the LoD3 review is that the Interconnector cost estimate is broadly appropriate for AACE Defined Class 4 scheme, but overall confidence is limited by early design maturity and heavy reliance on assumptions and uplifts.

2.5 United Utilities – North West Transfer – Key Headlines

2.5.1 UU has provided an indicative trading charge based over an 80-year period with a yearly Fixed and Variable Charge for the provision of supplies through the North West Transfer SRO via the release of raw water from Lake Vyrnwy and the development of new sources to backfill the volume released. The indicative trading charges from UU provide increments as flows increase from 25 to 180Ml/d in line with the increments provided in Gate 2. The indicative trading charges have been calculated using benchmarked updated cost estimates for the individual elements of the North West Transfer (NWT) SRO.

2.5.2 The Gate 2 figures represent an internal build cost to UU only and are not trading charges. The current estimate is an indicative trading charge.

2.5.3 The most notable changes since Gate 2 leading to an increase in estimated costs and therefore indicative trading charges are:

i. Lower cost source options have been discounted following environmental assessment through the RAPID process

ii. Greater scope identified to integrate the new sources into the existing UU distribution system

iii. Raw water sampling leading to more developed and robust treatment process designs

iv. Updated risk and optimism bias reflecting changes in scope and design maturity

v. Infrastructure being developed exclusively to support transfers (previously a shared utilisation/funding model was assumed)

vi. Industry wide increase in construction costs

2.5.4 The indicative trading charges (not costs) for the maximum 180Ml/d North West Transfer are presented below at 22/23 prices.

Table 2.2 North West Transfer summary current (applies to the full 180Ml/d transfer)

Price Type	Current Trading Charge (22/23 Prices)
Fixed Charge (£million per annum)	106.27
Variable Charge (£/Ml)	370.00

Source: United Utilities

2.6 Vyrnwy Bypass – Key Headlines

2.6.1 For the Vyrnwy Bypass, the estimate has been retained as per the Gate 2 position, represented here in 22/23 Prices. This is summarised in Table 1.3.

Table 2.3 Vyrnwy Bypass CAPEX summary

Gate 2 CAPEX (20/21 Prices) £	Current CAPEX (22/23 Prices) £	Delta £	Delta %
182,886,391	194,471,408	No new comparative figure provided	No new comparative figure provided

Source: United Utilities

2.7 Severn Trent – Minworth and Netheridge – Key Headlines

2.7.1 All costs have been converted to Fixed and Variable trading charges for both Minworth and Netheridge schemes.

2.7.2 Note: the trading charges shown below are aligned with the figures reported in the WRSE sheet submitted as part of this Interim Estimate Update. These figures included for Netheridge and Minworth are LoD2 assured estimates, which were the most recent and assured estimates available at the time of production of the WRSE sheet. Since the WRSE has been issued and assured, LoD3 assured estimates for Netheridge and Minworth have been provided. The LoD3 trading charges are included in Section 6 – Appendix A of this report.

2.7.3 The current Minworth and Netheridge figures are not directly comparable to the Gate 2 figures. This is due to five primary reasons and figures are summarised in Tables 1.4 and Table 1.5:

i. The Gate 2 figures represent an internal build cost to ST only and are not trading charges. The current estimate is a trading charge.

ii. Addition of a nitrate removal plant to the Minworth STT treatment design.

iii. Base CAPEX for the Minworth STT Treatment component has increased to reflect the need for two additional Biological Activated Carbon (BAC) filters

and two additional Granular Activated Carbon (GAC) filters and an interstage pumping station.

iv. Optimism bias and risk have increased to reflect uncertainties around ground conditions due to the relocation of the main treatment building from the Gate 2 location and the complexities of the treatment processes.

v. There has been an increase in power requirement from Gate 2 due to the introduction of an additional interstage pumping station to convey flow from the Floc-Sed system to the Filter building which is one kilometre away. Chemical costs are based on the annual tonnage of chemical type required to operate a given process. The quantities were estimated from the process modelling done for the Advanced Water Treatment Plant (AWTP) scope, with appropriate chemical cost/ton applied in line with current unit rates. Chemicals priced include ferric sulphate, ferric chloride, hydrogen peroxide, sodium bisulfite, liquid polymer, sodium hypochlorite etc. There has been an increase in chemical requirements from Gate 2 due to the doubling of the amount of ferric sulphate required based on findings from the bench tests carried out at Gate 3.

2.7.4 The trading charges (not costs) currently for Minworth are presented below at 22/23 prices.

Table 2.4 Minworth current trading charges (applies to the full 115Ml/d transfer)

Price Type	Current Trading Charge (22/23 Prices)
Fixed Charge (£million per annum)	26.84
Variable Charge (£/Ml)	565.40

Source: Severn Trent

2.7.5 The trading charges (not costs) currently for Netheridge are presented below at 22/23 prices.

Table 2.5 Netheridge current trading charges

Price Type	Current Trading Charge (22/23 Prices)
Fixed Charge (£million per annum)	17.65
Variable Charge (£/Ml)	687.50

Source: Severn Trent

3 Contextual Background

3.1 Introduction

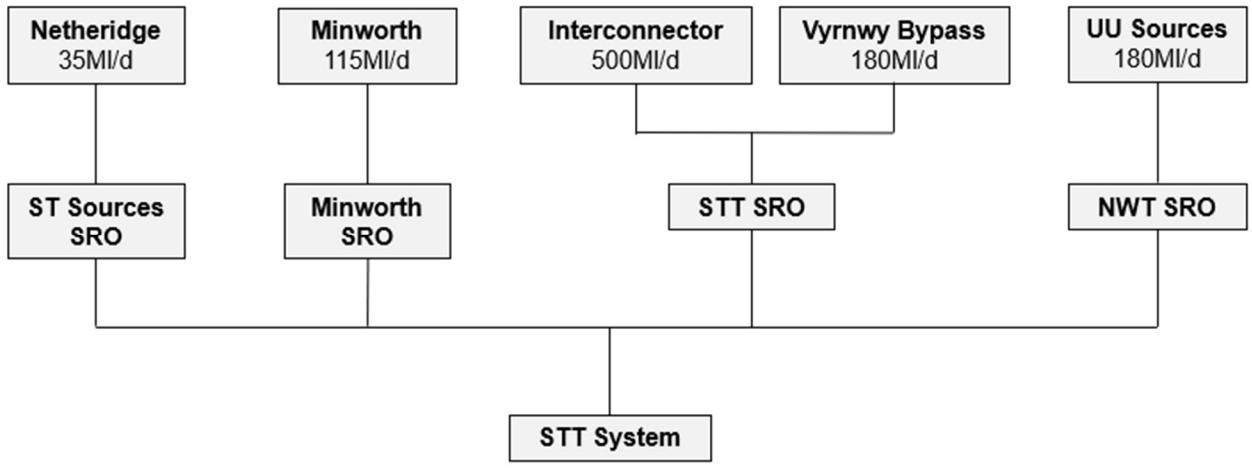
3.1.1 In 2025, the Partner Companies on STT (TW, ST, UU) agreed to update the cost estimate for STT SRO. This was limited to updates for the Interconnector and the source scope elements, in order to inform WRSE sensitivity modelling and for the purpose of a general project update given the time since Gate 2 and the change to a new TP in summer 2025.

3.1.2 The STT cost estimate update has been developed over three phases. Phase 1 was an update to the Interconnector in July 2025. Phase 2 took place in October 2025 and now, Phase 3 in April/May 2026. Phases 2 and 3 consisted of updates to the UU and ST sources.

3.1.3 Capital Expenditure (CAPEX), Operational Expenditure (OPEX) and Annual Incremental Costs (AIC) have been generated for the Interconnector and the UU and ST sources associated with the STT project. The estimates are based primarily upon the conceptual design reports prepared for Gate 2 plus any relevant design or assumption updates formed since Gate 2. Estimates for the ST Minworth Source have been brought up to date with the additional design and cost estimating work that has been completed on the Grand Union Canal (GUC) scheme. UU estimates have been brought up to date based on the changes to the North West Transfer SRO.

3.1.4 This report does not detail the methodology for the derivation of estimates as additional information and the full breakdown of scope and costs are presented in the relevant SRO papers. Each of the cost estimates for the individual elements has gone through its own third-party assurance and/or benchmarking including a review of the methodology of derivation of the estimates. The relationship between STT and the other SROs is presented below in Figure 2.1.

Figure 3.1 – STT and Related SROs



Source: STT Partner Companies

3.1.5 CAPEX costs were generated using UU, TW and ST cost databases for the relevant scope as outlined in this report.

3.1.6 The approach to CAPEX pricing used at this interim stage is broadly consistent with the approach used at Gate 2. These estimates have been formed in line with the ACWG Cost Consistency Methodology Revision E, issued February 2022.

3.1.7 Initial designs have been developed and costed using company costs where available, or industry costs for items such as the large pipelines.

3.2 United Utilities scope

3.2.1 UUs NWT SRO scope is at a feasibility level of design maturity (AACE Class 4). Estimates are primarily based on desktop studies with limited fieldwork underpinning the assumptions that support the estimate. A single preferred solution is developed but needs to be tested further through ongoing feasibility studies and design development through the RAPID gated process.

3.3 Severn Trent scope

3.3.1 For Minworth: the treatment works are at outline design stage, with the design maturity broadly ready for Design & Build (D&B) contractor engagement, notwithstanding STT risks identified for further scope development. The STT pipeline is at feasibility level of maturity. For Netheridge: the treatment works are assumed to be equivalent to Minworth for the GUC.

3.4 Basis of estimates

3.4.1 Indicative trading charge estimates were generated for each increment of volume change where applicable. These indicative trading charges include all fixed OPEX, variable OPEX and relevant capital costs also included and modelled as part of the indicative trading charge over an 80-year contract life.

3.4.2 Fixed OPEX (£/year) are operating costs that are incurred regardless of the volume of water produced or transferred. These costs are effectively time-based rather than output-based and are reported as a fixed annual cost. Typical examples include staffing and supervision, routine maintenance contracts, asset management and inspection, insurance, business rates, and standing charges.

3.4.3 Variable OPEX (£/Ml) are operating costs that vary with the volume of water supplied, treated, abstracted, or transferred. These costs are proportional to utilisation and are reported on a £ per megalitre basis. Typical examples include power and energy for pumping and treatment, treatment chemicals, consumables directly related to throughput and volume-related sludge handling/disposal.

3.4.4 Broadly, estimates included for optimism bias (unknown unknowns) were calculated in conjunction with a Quantitative Risk Analysis as detailed in the

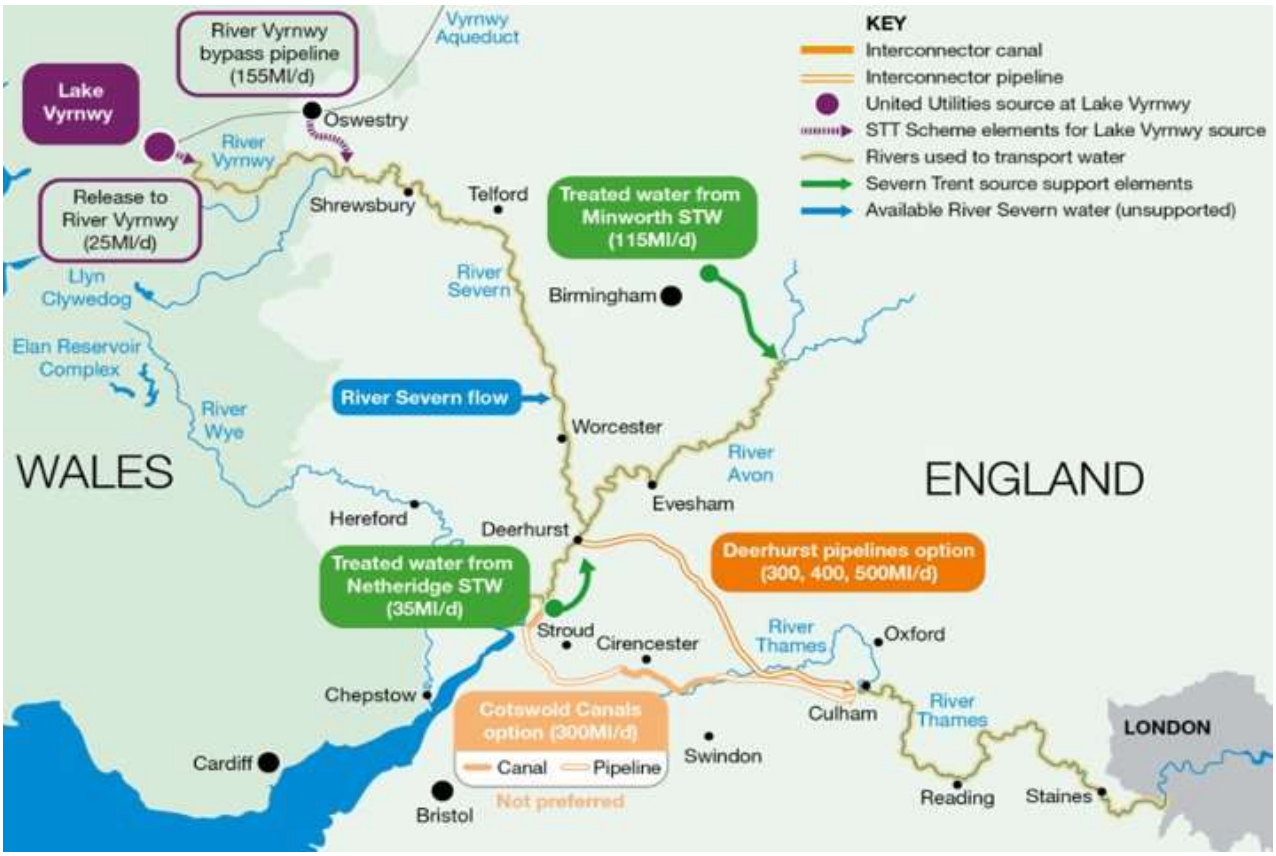
ACWG Cost Consistency Methodology. Known unknowns have been accounted for in risk sums and include allocations for ground conditions, land agreements and planning requirements.

3.4.5 All elements have been re-defined as either Standard or Non-Standard according to optimism bias definitions, as a revision of the Gate 2 approach in accordance with the guidance provided by the ACWG.

3.5 Project Scope

3.5.1 The STT SRO is a planned system which is intended to provide connectivity between the River Severn and the River Thames to enable transfer of raw water to the South East. The source of the water would be a combination of un-supported flows from the River Severn, and supported flows from source support elements. The source support elements are North West Transfer, Netheridge Sewage Treatment Works and Minworth inter-catchment transfer. There is an opportunity that additional source support elements will be identified during the development of the STT System. The source support elements listed above are covered under separate SRO's. The system diagram is provided in Fig. 2.2 below. Note that the canal is shown on the diagram below for completeness but as it is not the preferred option for the Interconnector element, it has been excluded from the cost update.

Figure 3.2 – STT System Diagram



Source: Thames Water

3.6 Interconnector

3.6.1 The Interconnector will provide partial treatment and invasive and non-native (INNS) species removal and transfer river water from the River Severn to the River Thames when there is a need. When the flow in the River Severn is insufficient or is below the hands-off flow, then source discharges will provide water into the River Severn to meet demand.

3.6.2 The Interconnector is a pumped/gravity main, extracting water from the River Severn, treating before pumping up the Cotswolds escarpment then gravity fall to the River Thames. The pipeline crosses multiple features, key crossings include the M5 and the Birmingham/Bristol mainline railway.

3.6.3 The estimate for the Interconnector includes for the following scope:

I. Intake structure on the River Severn;

II. Low lift pump station and pipeline to the water treatment works (WTW);

III. High lift pump station and high pressure pipeline to the top of the Cotswold's escarpment;

IV. Break pressure tank;

V. Gravity main to hydro turbine;

VI. Shafts and crossings of obstructions;

VII. Hydro turbine; and

VIII. Pipeline from hydro turbine to outfall structure on the River Thames.

3.7 North West Transfer

3.7.1 The North West Transfer (NWT) comprises enabling works within UU's system, including a portfolio of new sources and modifications to the Vyrnwy Aqueduct, to maintain supply resilience in the North West while allowing water to be made available for strategic inter-regional transfers.

3.8 Vyrnwy Bypass

3.8.1 The Vyrnwy Bypass is a component of the STT system, involving construction of a high-capacity gravity bypass pipeline to route raw water from the Vyrnwy Raw Water Aqueduct directly to the River Severn via Oswestry WTW, to mitigate environmental risks associated with the River Vyrnwy. At lower volume trades the raw water will bypass Oswestry WTW, however at larger volume trades some of the water will be required to maintain some of the treatment processes at Oswestry WTW and that element of the water will be partially treated.

3.9 Minworth

3.9.1 Minworth SRO is a source option for the STT SRO and GUC SRO. No further design has been undertaken on the Minworth to River Avon pipeline since Gate 2.

3.9.2 The scheme includes treatment at Minworth Wastewater Recycling Centre (WwRC) and a pipeline to transfer flows to the River Avon to supply STT SRO.

3.9.3 Minworth is proposed to be available in 2039 (assuming a March 2027 trigger point).

3.9.4 The schematic describing the Minworth scope is detailed in Figure 2.3.

Figure 3.3 – Minworth Schematic

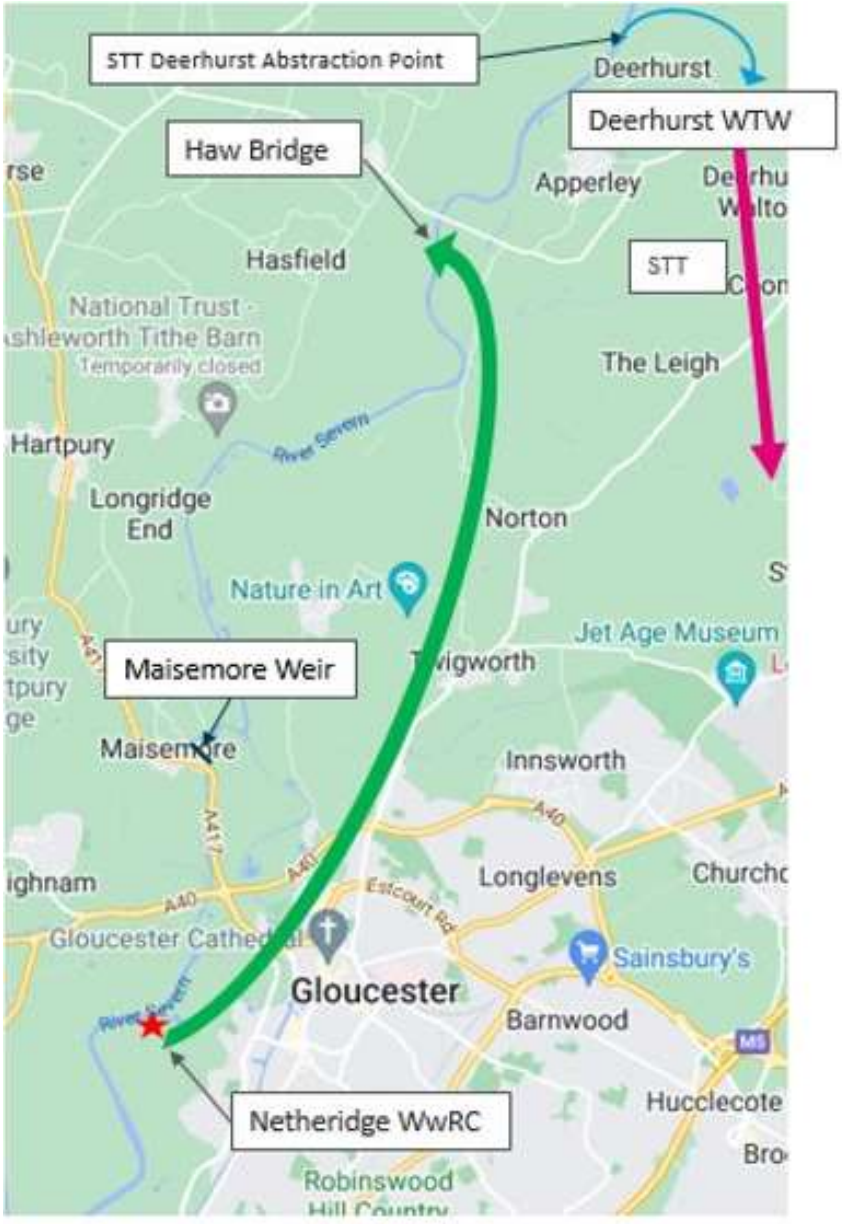
Source: Severn Trent

3.10 Netheridge

3.10.1 Netheridge is part of the Severn Trent Sources SRO and is proposed as the first source to support STT as the sweetening flow for the Interconnector pipeline.

3.10.2 This scheme entails treatment (assumed to be the same for Minworth) including Moving Bed Biofilm Reactor (MBBR), Coagulation and Magnetite (CoMag), ozonation process (Ozone), Biological Aerated Filter (BAF) and GAC of effluent at Netheridge WwRC with transfer and discharge to the River Severn upstream of the gauging station at Haw Bridge. A schematic of the scheme is shown below in Figure 2.4.

Figure 3.4 – Netheridge Schematic



Source: Severn Trent

3.11 Key Design Updates

3.11.1 **Interconnector:** The design is largely based on the Gate 2 submission. The early scheme design has been developed further as part of initial Gate 3 development, however this further development is not yet complete due to the project's move to an adaptive pathway. An LoD3 report has been produced which confirms the Gate 3 estimate refresh position plus Programme Partner changes.

3.11.2 **North West Transfer:** The most notable changes since Gate 2 leading to increases in cost estimates and therefore the indicative trading charges of the UU trade are as follows:

I. Lower cost source options have been discounted following environmental assessment through the RAPID process

II. Greater scope identified to integrate the new sources into the existing UU distribution system

III. Raw water sampling leading to more developed and robust treatment process designs

IV. Updated risk and optimism bias reflecting changes in scope and design maturity

V. Infrastructure being developed exclusively to support transfers (previously a shared utilisation/funding model was assumed)

VI. Industry wide increase in construction costs

VII. As a result of this, the solution of the NWT SRO has fundamentally changed subsequent to Gate 2.

3.11.3 **Minworth:** Some additional design work has been undertaken on the Minworth scheme where water will be transferred to the Grand Union Canal for the GUC SRO. An additional nitrate removal process has been incorporated. Elements of the design and costs associated with the treatment aspects of that project have been used to develop the costs presented in this paper. There has been no additional design work undertaken since Gate 2 in relation to the discharge pipeline or environmental aspects of the receiving watercourse and these therefore remain unchanged from Gate 2.

3.11.4 **Netheridge:** An additional nitrate removal process has been incorporated. No treatment or pipeline design work has been undertaken since Gate 2 on the Netheridge scheme. There have been some environmental assessments of the receiving watercourse over the past two years, and these remain ongoing.

4 Estimate details

4.1 Thames Water Interconnector

4.1.1 The current Interconnector CAPEX estimate for the 500Ml/d option is £4.51bn at Q3 2024, which is £4.19bn at 22/23 prices. This is summarised in table 3.1.

4.1.2 The previous Gate 2 Interconnector CAPEX cost estimate was £1.27bn at 20/21 prices, which is £1.59bn at 22/23 prices. This is a **delta of +£2.60bn, which is an increase of 164%**. The reasons for this delta are set out in section 2 of this report.

Table 4.1 Severn to Thames Interconnector CAPEX Breakdown

Item	Estimated Cost £
Direct Construction Costs Including Programme Partner adjustments	1,249,728,755
Indirect Costs, Risk and Optimism Bias	3,259,894,065
Total Cost at Q3 2024	**4,509,622,820**
Total Cost Adjusted to 22/23 Prices	**4,192,242,667**

Source: Thames Water

4.2 United Utilities - North West Transfer

4.2.1 The North West Transfer (NWT) estimate provides indicative trading prices for the maximum 180Ml/d option as a fixed charge of £106.27m per annum and variable charge of £370 per Ml at 22/23 prices. Indicative charges have also been provided for incremental increases in volume of transfer up to 180 Ml/d. These are summarised in Table 3.2.

4.2.2 Note: the indicative trading charges shown below are aligned with the initial figures reported in the WRSE sheet submitted as part of this interim estimate update. Following assurance checks, the indicative fixed charge figures have subsequently been updated leading to marginal adjustments ranging from -1.1% to +2.5%. . The updated indicative trading charges are included in Section 6 – Appendix B of this report.

Table 4.2 North West Transfer trading charges

Source: United Utilities

Trade Volume	25Ml/d	50Ml/d	80Ml/d	110Ml/d	140Ml/d	160Ml/d	180Ml/d
Total fixed charge (£million per annum)	16.53	52.33	59.79	91.07	91.07	97.43	106.27

Trade Volume	25Ml/d	50Ml/d	80Ml/d	110Ml/d	140Ml/d	160Ml/d	180Ml/d
Total variable charge (£/Ml)	369	335	335	374	374	374	370

Source: United Utilities

4.2.3 Key assumptions and exclusions for this estimate are as follows:

I. All Prices are in 2022/23 price base

II. The pricing increments are defined by the step changes in enabling works required on the Vyrnwy Aqueduct. Once each step is activated, the contractual trade volume could be reduced, however the fixed charge would remain the same to allow the recovery of the capital costs (i.e. once the 55Ml/d trade is activated, should in future years only 25Ml/d be required, the fixed cost would be retained at the 55Ml/d rate as the infrastructure will have already been financed).

III. These are indicative trading charges to inform water resource modelling and will be subject to change. They are not a commercial offer.

IV. The indicative trading charges are based on an 80-year contract period to align with the WRMP modelling process.

V. 100% of all Capex is funded by the trade.

VI. All trades over 25Ml/d will require the Vyrnwy Bypass pipeline which is not included in the above indicative trading charges but is shown below as a cost with its own separate list of assumptions.

VII. Variable charges are based on the differential between new source costs and average treatment cost.

4.2.4 The current Vyrnwy Bypass CAPEX estimate is £194.47m at 22/23 prices (uplifted by 6.3% from 20/21 Prices, based on All Company Working Group (ACWG) published indices in April 2026). The previous Vyrnwy Bypass CAPEX estimate at Gate 2 was the same. This is summarised in Table 3.3.

Table 4.3 Vyrnwy Bypass CAPEX

Asset Class	Estimated Cost £
Pipelines (100)	103,085,988
Tunnels (100)	58,818,202
Reinforced Concrete Tanks / Service Reservoirs (80)	10,626,887
ICA (Instrumentation, Control and Automation) (10)	550,224
Headworks/Valves (60)	3,679,937
Fencing (10)	109,815

Asset Class	Estimated Cost £
Land (Non depreciating)	3,490,193
Total Construction Cost	**180,361,245**
Risk	14,110,163
Optimism Bias (OB)	
Total Construction Cost including Risk and OB	**194,471,408**

Source: United Utilities

4.2.5 The Vyrnwy Bypass has been designed and estimated solely for the maximum transfer scenario (180Ml/d).

4.3 Severn Trent – Minworth and Netheridge

4.3.1 The CAPEX costs have been converted to Fixed and Variable trading charges for both Minworth and Netheridge schemes. The reasons for the deltas are set out in section 2 of this report.

4.3.2 Note: the trading charges shown below are aligned with the figures reported in the WRSE sheet submitted as part of this Interim Estimate Update. These figures included for Netheridge and Minworth are LoD2 assured estimates, which were the most recent and assured estimates available at the time of production of the WRSE sheet. Since the WRSE has been issued and assured, LoD3 assured estimates for Netheridge and Minworth have been provided. The LoD3 trading charges are included in Section 6 – Appendix A of this report.

4.3.3 The current Minworth estimate for 115Ml (no phasing) includes for fixed charges of £26.84m per annum and variable charges of £565.40 per Ml. This is summarised in Table 3.4.

4.3.4 The ST indicative charges have been developed based upon the following assumptions:

I. All Prices are in 2022/23 price base.

II. These are indicative prices to inform water resource modelling and will be subject to change. They are not a commercial offer.

III. The prices are based on an 80-year contract period to align with the WRMP modelling process.

IV. 100% of all Capex is funded by the trade.

Table 4.4 Minworth trading charges

Trade Volume	Original Minworth 115 Ml/d - No Phasing (22/23 Prices)	Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment (22/23 Prices)	Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment + 57 Ml/d Treatment (22/23 Prices)
Phasing	N/A	Phase 1	Phase 2
Fixed (£) Annual Water Trading Charge	26,836,927	22,093,855	22,093,855 + 9,727,757 = 31,821,612
Variable (£/Ml) Annual Water Trading Charge	565.4	712.8	712.8

Source: Severn Trent

4.3.5 The current Netheridge estimate for 35Mld includes fixed charges of £17.65 per annum and variable charges of £687.50 per Ml. This is summarised in Table 3.5.

Table 4.5 Netheridge trading charges

Item	Estimated Cost
Fixed (£) Annual Water Trading Charge	17,653,417
Variable (£/Ml) Annual Water Trading Charge	687.5

Source: Severn Trent

5 High level methodology

5.1.1 The interim estimate update was undertaken to revise the prior (Gate 2) submissions and support WRSE modelling, including comparison of STT against alternative SROs.

5.1.2 These estimates have taken account of lessons learnt from other SROs which have experienced cost increases moving from Gate 2 to Gate 3.

5.1.3 The scope of the interim update was agreed at the outset and ranged from significant changes in scope to targeted estimate updates, reflecting the maturity of the programme and data availability at the time. The information utilised to support this interim estimate update is included in section 3 of this report.

5.1.4 The TP coordinated the update process, acting as the central point for collation, validation, and integration of Partner Company inputs.

5.1.5 Separate estimate inputs were requested, managed, and reported by STT system element (Interconnector, NWT sources, Netheridge, and Minworth). Partner Companies retained ownership of estimate development for their respective scope elements, including methodology, assumptions, pricing or cost basis and assurance/benchmarking of all estimates produced.

5.1.6 Multiple coordination and technical review calls were held each month with Partner Companies and sponsors to track progress, clarify assumptions, and capture evolving inputs.

5.1.7 These recurring calls were supplemented by ad-hoc meetings where required to resolve specific data gaps, comparability issues, or assurance queries.

5.1.8 Third-party assurance outputs (for example, LoD3 and other assurance reviews) were incorporated where available to confirm estimate maturity and provide confidence in retained Gate outputs.

5.1.9 In parallel with narrative report development, WRSE modelling templates were updated, with historic data cleansed and replaced by the agreed interim inputs. These were subject to multiple revisions to refine the sheet, in line with previous option modelling.

5.1.10 Headline movements and key changes were tracked throughout the process to maintain visibility of estimate evolution and support sponsor discussions.

5.1.11 Particular emphasis was placed on clearly distinguishing between costs and trading charges, recognising that inputs were not directly comparable with Gate 2 in all cases.

5.1.12 Where like-for-like comparison was not possible, a high-level explanation of changes from Gate 2 was developed, covering scope, methodology, assumptions, and risk treatment.

5.1.13 Draft reports were issued for structured review, with comments resolved through tracked changes, review meetings, and follow-up calls as required.

5.1.14 Final outputs were completed in accordance with agreed document control, governance, and submission processes, and issued via the appropriate programme systems.

6 Recommendations and next steps

6.1.1 Provide WRSE an updated position of STT to support the December 2026 cost and carbon data window.

6.1.2 Further develop the cost–price comparability across each of the STT elements - documenting approach for future updates that distinguishes costs, prices, and water trading charges, and defines how each will be reported and compared across programme stages.

6.1.3 Review the required levels of independent assurance for each STT element at the next stage gate to ensure assurance scope, timing, and responsibilities are aligned across Partner Companies.

6.1.4 Further develop the estimate by validating design assumptions from Gate 2 as and when new design information becomes available.

6.1.5 Standardise future assumptions across Partner Company inputs - such as contract period, phasing logic, treatment standards, inclusion of losses etc.

6.1.6 Increase maturity level of risk and optimism bias in line with any further design development - review whether retained Gate-level risk and optimism bias assumptions remain appropriate and define when refreshed QRA / risk modelling is required.

6.1.7 Incorporate the latest commercial and regulatory guidance in relation to the estimating and pricing of transfers and contractual mechanisms currently being developed by Ofwat.

6.1.8 Definition of the assumed procurement routes for the STT components, especially in relation to the Vyrnwy Bypass, as these will inform more accurate cost estimating and pricing assumptions.

6.1.9 Establish a collective understanding of the latest WRSE plan for modelling, e.g. sequencing of sources, timing of need, and the like.

Glossary

Term	Definition
Adaptive Pathway	A phased approach to infrastructure delivery that allows decisions and investments to evolve over time in response to uncertainty and emerging information.
Annual Incremental Cost (AIC)	The annualised cost of a scheme, combining capital and operational costs, typically used for comparison in water resource planning.
CAPEX (Capital Expenditure)	The upfront cost required to design and construct infrastructure assets.
Fixed OPEX	Costs incurred regardless of output (e.g., staffing, maintenance, insurance).
Gate 2 / Gate 3	Stages in the RAPID programme lifecycle used to assess project development, cost maturity, and deliverability.
Hands-off Flow	A threshold river flow below which abstraction is restricted to protect the environment.
Interconnector	The pipeline system transferring water from the River Severn to the River Thames, including treatment and pumping infrastructure.
Line of Defence (LoD)	A measure of estimate maturity and detail (e.g., LoD2, LoD3 indicating increasing confidence and definition). LOD2 = Internal assurance (the individual is independent from the project) LOD3 = External independent assurance
Megalitre per day (ML/d)	A unit of flow rate representing one million litres of water per day.
Minworth Scheme	A treated effluent reuse scheme supplying water to the River Avon for STT support.
Netheridge Scheme	A wastewater reuse scheme providing treated flows to support the STT Interconnector.
North West Transfer (NWT)	A scheme enabling transfer of water from United Utilities' region to support wider inter-regional supply.
OPEX (Operational Expenditure)	Ongoing costs associated with operating and maintaining assets, including fixed and variable components.
Optimism Bias	An adjustment applied to cost estimates to account for unknown risks and uncertainties ("unknown unknowns").
Quantitative Risk Analysis (QRA)	A structured method to quantify potential risks and their financial impact within project cost estimates.
Strategic Resource Option (SRO)	A large-scale water resource scheme developed to improve long-term supply resilience.

Term	Definition
Trading Charge	A price structure used in water transfers, combining capital recovery and operational costs, typically expressed as fixed (£/year) and variable (£/ML) charges.
Variable OPEX	Costs that vary with output or usage (e.g., energy, chemicals, consumables).
Vyrnwy Bypass	A pipeline enabling raw water transfer from the Vyrnwy Aqueduct to the River Severn.

Acronyms

Acronym	Term
AACE	Association for the Advancement of Cost Engineering
ACWG	All Company Working Group
AIC	Annual Incremental Cost
AWTP	Advanced Water Treatment Plant
BAF	Biological Aerated Filter
BAC	Biological Activated Carbon
CAPEX	Capital Expenditure
CoMag	Coagulation and Magnetite Treatment
D&B	Design and Build
D&PG	Design and Programme Governance
GAC	Granular Activated Carbon
GUC	Grand Union Canal
INNS	Invasive Non-Native Species
LoD	Line of Defence
MBBR	Moving Bed Biofilm Reactor
ML/d	Megalitres per day
NWT	North West Transfer
OPEX	Operational Expenditure
QRA	Quantitative Risk Analysis
RAPID	Regulators' Alliance for Progressing Infrastructure Development
SRO	Strategic Resource Option
STT	Severn to Thames Transfer
ST	Severn Trent
TP	Technical Partner
TW	Thames Water
UU	United Utilities
WHR	White Horse Reservoir
WRMP	Water Resources Management Plan
WRSE	Water Resources South East
WTW	Water Treatment Works

Acronym	Term
WwRC	Wastewater Recycling Centre

Appendix A Minworth and Netheridge Updated Trading Charges

A.1.1 Provided below are the updated LoD3 trading charges for Minworth and Netheridge at 22/23 Prices.

A.1.2 The delta from LoD2 to LoD3 is as follows:

I. Original Minworth 115 Ml/d - No Phasing – Fixed = -0.5%

II. Original Minworth 115 Ml/d - No Phasing – Variable = 0.0%

III. Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment – Fixed = -0.6%

IV. Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment – Variable = 0.0%

V. Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment + 57 Ml/d Treatment – Fixed = -0.5%

VI. Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment + 57 Ml/d Treatment – Variable = 0.0%

Table A.1 Minworth Breakdown

Trade Volume	Original Minworth 115 Ml/d - No Phasing (22/23 Prices)	Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment (22/23 Prices)	Minworth 115 Ml/d Pipeline + 58 Ml/d Treatment + 57 Ml/d Treatment (22/23 Prices)
Phasing	N/A	Phase 1	Phase 2
Fixed (£million per annum) Annual Water Trading Charge	26.69	21.97	21.97 + 9,68 = **31.65**
Variable (£/Ml) Annual Water Trading Charge	565.4	712.8	712.8

Source: Severn Trent

Table A.2 Netheridge Summary

Item	Estimated Cost
Fixed (£million per annum) Annual Water Trading Charge	17.46
Variable (£/Ml) Annual Water Trading Charge	687.5

Source: Severn Trent

A.1.3 The delta from LoD2 to LoD3 is as follows:

I. Netheridge – Fixed = -1.1%

II. Netheridge – Variable = 0.0%

Appendix B United Utilities Updated Indicative Trading Charges

B.1.1 Provided below are the updated indicative fixed trading charges for the North West Transfer elements of STT at 22/23 Prices, leading to marginal adjustments in charges.

Table A.3 North West Transfer Summary

Trade Volume	25Ml/d	50Ml/d	80Ml/d	110Ml/d	140Ml/d	160Ml/d	180Ml/d
Total Fixed charge (£million per annum)	16.94	52.90	59.16	91.63	91.63	97.79	106.41

Source: United Utilities

B.1.2 The delta for the same trade volume increments is as follows:

B.1.3 North West Transfer 25ML/d – Fixed = +2.5%

B.1.4 North West Transfer 50ML/d – Fixed = +1.1%

B.1.5 North West Transfer 80ML/d – Fixed = -1.1%

B.1.6 North West Transfer 110ML/d – Fixed = +0.6%

B.1.7 North West Transfer 140ML/d – Fixed = +0.6%

B.1.8 North West Transfer 160ML/d – Fixed = +0.4%

B.1.9 North West Transfer 180ML/d – Fixed = +0.1%

Delivered in Partnership by