

Strategic Regional Water Resource Solutions: Annex F: Project Delivery Plan

Standard Gate Two Submission for River Severn to River Thames Transfer (STT)

Date: November 2022



Severn to Thames Transfer Project Delivery Plan

STT-G2-S3-356
November 2022

Disclaimer

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

Contents

1	Purpose	6
2	Project Plan	6
3	Risks and mitigations	11
4	Proposals for Gate 3	16

Glossary and Abbreviations

Glossary	
Cotswold Canals	Partially refurbished canal network and associated infrastructure (including pumping stations, bypass pipework, treatment plant and pipeline) with design capacity of 300ML/d to convey river water from River Severn to River Thames.
Deerhurst Pipeline	Pipeline and associated infrastructure (including pump station, treatment plant, break pressure tank) with design capacity of 300/400/500ML/d to convey river water from River Severn to River Thames.
Hands off Flow	This is the flow below which abstractions from the River Severn are restricted or not permitted
Interconnector	Term used to describe infrastructure required to convey river water from River Severn to River Thames. The Interconnector options are the Deerhurst Pipeline or Cotswold Canals.
Interconnector design capacity	Raw water volume abstracted from the River Severn at the start of the Interconnector. Not the volume delivered to the River Thames at the end of the Interconnector and not the Deployable Output of the STT system.
Minworth SRO	Minworth WwTW effluent transfer to the River Avon (covered under Severn Trent Water (STW) Minworth SRO developed by Severn Trent and Affinity Water). This has the capacity to release up to 115ML/d into the River Avon.
Mythe Abstraction Licence	Mythe Water Treatment Works (WTW) source support element (covered under Severn Trent Sources SRO developed by STW). Unused abstraction licence transfer has the capacity to release 15ML/d into the River Severn.
Netheridge Wastewater Treatment Works	Netheridge Wastewater Treatment Works (WwTW) source support element (covered under Severn Trent Sources SRO developed by STW). Effluent diversion has the capacity to release up to 35ML/d into the River Severn.
Source support elements	Elements which have the potential to make additional raw water resources available for abstraction at the start of the Interconnector.
STT partners	The three companies promoting this SRO i.e. Severn Trent Water, United Utilities and Thames Water
STT SRO	Comprises the Interconnector, the River Vyrnwy Bypass Pipeline, Shrewsbury Redeployment and conveyance of the source support elements through the river systems (Vyrnwy, Severn, Avon, and Thames).
STT system	Comprises the STT SRO plus STT source support elements that together form an operational system.
STT system operating strategy	Description of contribution/operation of source support elements and river systems to form an operational system.
Supported flow	When the flow in the River Severn is below the hands-off flow rate at which point abstraction from the River Severn may lead to unacceptable environmental impacts downstream. To mitigate these environmental impacts a permitting strategy is being developed whereby additional water put into the River Severn can be abstracted for a Severn to Thames transfer. The additional water is referred to as Supported flow
Unsupported flow	Unsupported flow occurs when the flow in the River Severn is above the hands-off flow rate and raw water can be freely abstracted from the River Severn for transfer to the River Thames
Vyrnwy Mitigation – River Vyrnwy Bypass Pipeline	Pipeline from the Oswestry Water Treatment Works to the River Severn. The release of partially treated water via the bypass pipeline is a mitigation measure to the River Vyrnwy from the Vyrnwy Release source support element. The pipeline has the capacity to convey up to 155ML/d.
Shrewsbury Redeployment	Shrewsbury Redeployment is facilitated by a supply from the Oswestry WTW. This allows the reduction in the abstraction at Shelton WTW of 25ML/d.
Vyrnwy Release	Lake Vyrnwy source support element (covered under North West Transfer SRO developed by United Utilities). This source has a capacity of up to 180ML/d. A direct release of 25ML/d into River Vyrnwy.

Abbreviations	
ACWG	All Company Working Group
AMP	Asset Management Plan
BaU	Business as Usual
CAP	Competitively Appointed Provider
DCO	Development Consent Order
DPC	Direct Procurement for Customers
DWI	Drinking Water Inspectorate
EA	Environment Agency
EIA	Environmental Impact Assessment
HoF	Hands off Flow
HRA	Habitat Regulations Assessment
ML	Mega litres
ML/d	Mega litres per day
ITT	Invitation to Tender
IVM	Investment Modelling
NC	Natural Capital
NE	Natural England
NPV	Net Present Value
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
NWT	North West Transfer SRO
OPEX	Operational Expenditure
PMB	Programme Management Board
PQQ	Pre-qualification questionaore
RAPID	Regulatory Alliance for Progressing Infrastructure Development
SAC	Special Area of Conservation
SESRO	South East Strategic Reservoir Option
SMNR	Sustainable Management of Natural Resources
SRO	Strategic Resource Option
STT	River Severn to River Thames Transfer
STW	Severn Trent Water
TW	Thames Water
UU	United Utilities
WFD	Water Framework Directive
WRMP	Water Resource Management Plan
WRSE	Water Resources South East
WRW	Water Resources West
WTW	Water Treatment Works
WwTW	Wastewater Treatment Works

1 Purpose

- 1.1.1 This report is prepared in support of the Severn to Thames Transfer (STT) Gate 2 main report, chapter 7, programme and planning sections relating to:
- Section 7.1: The project plan
 - Section 7.3 Risks and mitigations
 - Section 7.4 Proposed Gate 3 activities and timeline
- 1.1.2 The sections of chapter 7 of the Gate 2 main report relating to the 'planning consenting route strategy' and 'procurement ownership and operational strategy' are reported separately.

2 Project Plan

2.1 General approach

- 2.1.1 The project timeline has been developed by integrating technical, commercial, planning and stakeholder workstream activities into an overall SRO programme. This also incorporates the principal WRMP24, DCO, DPC and construction activities. Comparisons have been made across other comparable SROs key activities, dependencies and durations to provide high-level benchmarking, a level of consistency, and assurance.
- 2.1.2 The timeline for Gate 3 is based on ensuring STT could be "construction ready" in AMP8 (2025 to 2030), if required. However, other later delivery timescales may be appropriate which will be confirmed once the regional and WRMP24 plans are finalised in 2023.
- 2.1.3 As set out in section 4 below, the STT Gate 3 duration is proposed as a little over 2 years. A flexible approach is proposed for the programme with a "Mid-Gate 3 Checkpoint" at the end of 2023. The purpose of the checkpoint is to confirm and adjust the progression of the STT project, as appropriate, once the final regional and company WRMP24 plans are approved, including any additional direction by Ofwat/ RAPID.

2.2 Earliest project delivery timeline

- 2.2.1 Figure 2.1 summarises an overall project plan including the support sources to show the earliest timeline to achieve STT SRO 'construction readiness' within AMP8.
- 2.2.2 The plan is considered representative of the earliest possible development of the STT SRO through design, consenting, procurement, construction, and commissioning activities. It indicates the STT SRO could, at the earliest, be 'construction ready' in mid-2028 and commissioned by the end of 2033.
- 2.2.3 It should be noted that there is no quantified schedule risk allowance in this programme and this programme represents an 'earliest available water date'. At Gate 3 the assessment of schedule risk will be developed further in line with the recommendations of the Treasury Green Book to account for both known and unknown risks in the delivery of future activities.

2.2.4 Key milestones are summarised as follows:

Milestone / activity	Principal Outputs	Date**
Gate 2 submission / Gate 3 commencement	<input type="checkbox"/> Feasibility and options selection	Nov 2022
Mid-Gate 3 Checkpoint	<input type="checkbox"/> Decision on SRO progression, and any changes to funding / partner participation <input type="checkbox"/> Stage 1 engagement activities undertaken <input type="checkbox"/> DPC control point B complete and control point C in preparation	Dec 2023
Gate 3 end / Gate 4 commencement	<input type="checkbox"/> Decision point to proceed with preparing DCO and DPC tender documentation <input type="checkbox"/> Stage 2 engagement activities undertaken <input type="checkbox"/> Preliminary Environmental Report drafted <input type="checkbox"/> Preferred single route option and sites identified <input type="checkbox"/> Preparation towards DPC control points D & E	Q1 2025
Gate 4 completion	<input type="checkbox"/> Statutory consultation undertaken and ready to submit DCO application <input type="checkbox"/> DPC control points D and E issued and ready to go to market	Q3 2026
DCO consent	<input type="checkbox"/> Granting of a Development Consent Order <input type="checkbox"/> Return and assessment of DPC tenders	Q1 2028
'Construction ready'	<input type="checkbox"/> DPC control point F & Competitively Appointed Provider (CAP) award	Q2 2028
Complete commissioning	<input type="checkbox"/> STT 'Unsupported' deployable output with supported sweetening flows (Netheridge)	Q3 2033
** date quarters are for calendar years, e.g., Q1 is January to March.		

Table 2.1: Earliest project delivery milestones

2.2.5 The Mid-Gate 3 Checkpoint date in December 2023 is proposed on the basis that regional and company water resource plans are finalised and published in September 2023. If the publication of final plans were delayed then, by agreement with RAPID, the date of the Mid-Gate 3 Checkpoint may need to be put back into 2024.

2.3 Critical path, key programme interdependences, constraints and assumptions

2.3.1 The overall critical path activities for the STT Interconnector delivery are:

- Finalisation and approval of WRMP24 plans in 2023 and decision to proceed past the Mid-Gate3 Checkpoint
- the Interconnector DCO consenting pre-application process;
- DCO examination and determination;

- Upon DCO granting of consent, feeding any conditions and requirements from the DCO consent into the DPC preferred bidder appointment process,
- Preparation and submission of a final business case (control point F) approval and Competitively Appointed Provider award;
- the Interconnector contract mobilisation, detailed design, discharge of consents, construction and commissioning.

2.3.2 The principal programme interdependences and constraints and assumptions are given in Tables 2.2 and 2.3.

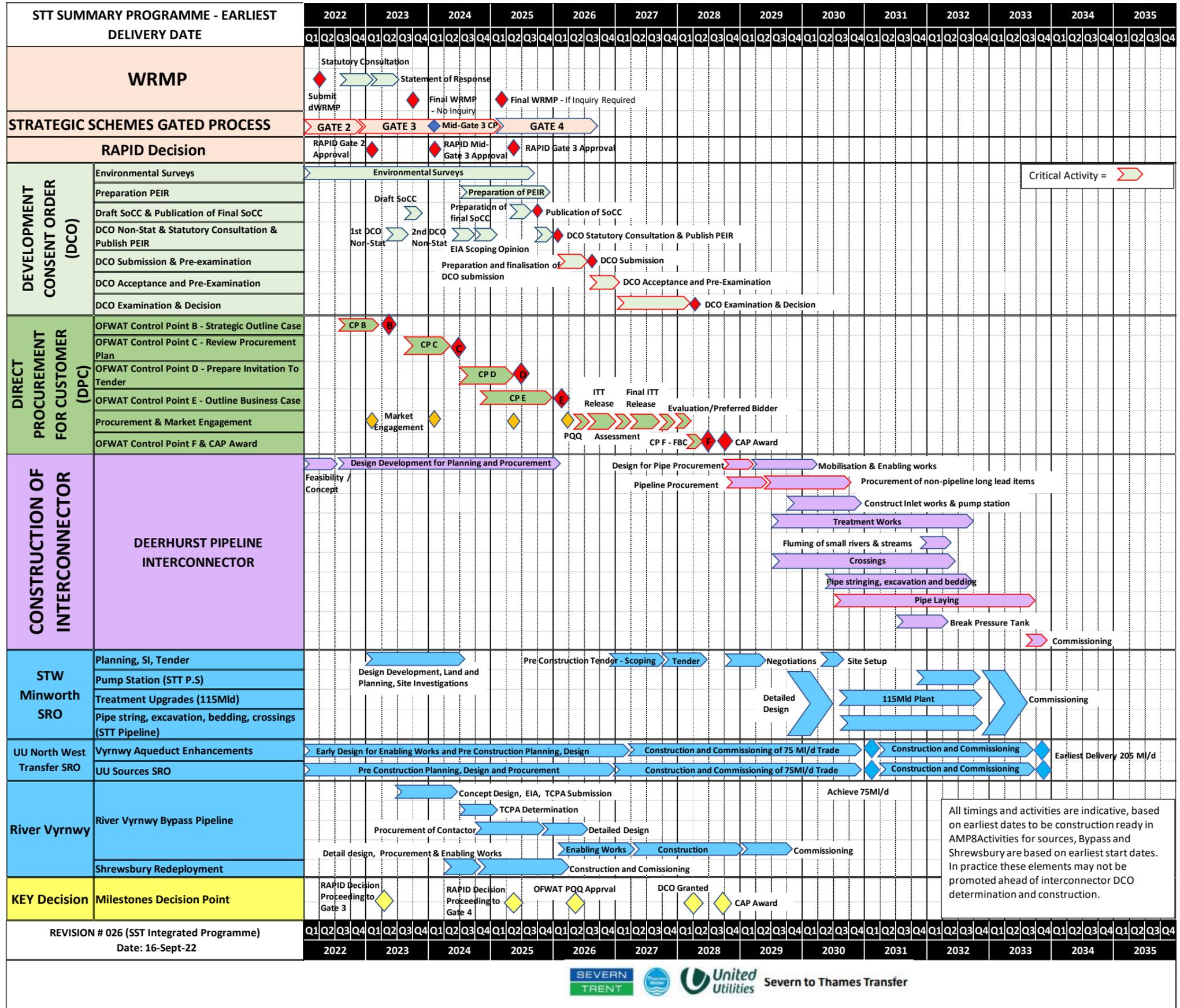
Interdependency/ constraint	Description
Regional planning and WRMP24 processes	The programme is dependent on the relevant regional planning and final WRMP24 approvals process. The outcome of this process will determine the need, timing, and phasing of STT, with a decision point proposed at the Mid-Gate3 Checkpoint on how the project then proceeds.
Ofwat/RAPID decisions	The programme will be affected by the timeliness and nature of decisions made by the regulator at Gate 2, Mid-Gate3 Checkpoint and end of Gates 3 and 4 as to whether the STT SRO proceeds or otherwise.
DPC and DCO	The DPC (control points B to E) run in parallel with the consenting process. The development and agreement of Invitation to Tender documentation for control point D is a significant work activity and needs to be commenced during Gate 3 to avoid constraining the programme. The DPC award is also dependent on the granting of a DCO.
Netheridge scheme development	The provision of Netheridge treated effluent is critical to the operation of the SRO as it allows the abstraction of Interconnector sweetening flows from the River Severn during low flow conditions in the River Severn (i.e. below the hands-off flow). Netheridge design development, consultation, environmental, consenting and procurement activities need to be undertaken in step with the Interconnector activities as likely to be treated as 'associated development' within the interconnector DCO with oversight from the proposed Gate 3 STT System Co-ordination

Table 2.2: Principal programme dependencies and constraints

Assumption	Description
SRO requirement	STT is required to proceed as part of the regional and WRMP24 plans.
WRMP public enquiry	If there is WRMP24 public enquiry, development of the SRO can proceed in parallel, and the outcome of the enquiry does not change the WRMP24 options selection.
Gate 3 target delivery date.	Assume the STT project proceeds into Gate 3 on the basis of being 'construction ready' in AMP8, but with a Mid-Gate 3 Checkpoint to review this assumption and the requirement and pace of delivery.
Environmental Impact Assessment (EIA) and DCO	Assume the Interconnector will require an Environmental Impact Assessment and consent through a Development Consent Order
DPC	Interconnector is procured through a DPC model, with a "late" tender model for appointment of a CAP undertaking post-consent detailed design, build and operation.
Option type	The programme is based on the assumption that consultation on the SRO will confirm the Interconnector as a direct pipeline solution (as opposed to a pipeline solution with sections of canal refurbishment). The outcome of future engagement and consultation may change this assumption.
Non-statutory consultations	Two non-statutory phases of consultation: Stage 1 on route corridors and alternatives; Stage 2 on a preferred route, construction, and permanent works.
WRMP24 finalisation	WRMP24 plans will be finalised and approved in 2023 and decision to proceed made at the proposed Mid-Gate3 Checkpoint.
Continuity through gates	Work progresses immediately through the Mid-Gate3 Checkpoint, Gate 3 and Gate 4 without significant pauses for regulator or other reviews and approvals.

DCO acceptance, determination and requirements	DCO is accepted and determined (granted) on first submission and there are no exceptional or unexpected material changes or restrictions from the process that then delay contract award to the CAP.
Vyrnwy Bypass and Shrewsbury Redeployment	The critical path runs through the interconnector development, consenting and procurement activities. It is assumed the bypass and Shrewsbury Redeployment are related to STT support sources (as opposed to support to the WRW region) and are independent of the programming of the STT Interconnector.
Construction ready	Construction ready means: DCO and other primary consents are given, and construction contract award to a CAP. This is notwithstanding that a construction contract will include mobilization activities, discharge of secondary consents/requirements, detailed design, enabling works and other incidental works ahead of the main construction activities. The SRO will be deemed as construction ready at contract award.
Commercial Agreements	Commercial agreements between the partners are in place in time to enable both (i) joint working through the SRO development stages and (ii) commercial bulk supply agreements are established in time to enable commercial DPC procurement activities to proceed.

Table 2.3: Principal programme assumptions



3 Risks and mitigations

- 3.1.1 Risk assessments have been completed for the STT SRO and overarching STT system with the output reported to RAPID within the quarterly reports.
- 3.1.2 Risk is managed across the SRO programme using two specific approaches:
- 3.1.3 A Costed Risk Register which is produced by the technical workstreams. This follows the standard ACWG Cost Consistency Methodology and provides the detailed breakdown of technical and construction phase risks that could have a material impact on the costs of the SRO.
- 3.1.4 The overarching Programme Risk Register, as reported at high level to RAPID through the quarterly reporting process. This provides a register of programme-level risks to the overall delivery of the SRO. It includes risks associated with the STT system where these would not otherwise be dealt with at a SRO level.
- 3.1.5 The output of the risk assessments completed for the source support elements are reported under the separate United Utilities and Severn Trent Water SRO reports.
- 3.1.6 The STT programme risk register has been maintained and reviewed with STT partners to review and update the mitigation strategy, identify new and emerging strategies, and highlight key risks to be reported to the regulator.
- 3.1.7 The key overarching programme risks, as presented in the RAPID quarterly report, are summarised in Table 7-4.

Reference	Short description name / trend	Pre-mitigation Impact	Detailed description including plan to manage (in just a few sentences)	Post-mitigation impact
RSK001	Challenges and objections from stakeholders. Trend: Stable	Amber	Risk: Potential challenges and objections to the SRO proposals from stakeholders in England and Wales. Includes potentially affected landowners, communities, interest groups, local authorities, and other statutory consultees Mitigation: Implement engagement plans to ensure stakeholders are appropriately briefed and that we understand and address their concerns as far as is reasonable for Gate 2, with further actions identified for Gate 3. Co-ordinate STT plans with companies and regional groups to ensure joined-up engagement activities and consistent messaging. Engagement to include Welsh stakeholders and the requirements of the Wellbeing of Future Generations (Wales) Act 2015. Recognise that as the SRO develops new issues will emerge and our engagement with stakeholders will increase with a robust process to be adopted to as part of pre-application consenting processes. To avoid unnecessary concerns and distress, engagement with potentially affected landowners will only be undertaken at Gate 3, starting with route corridors and only if the SRO is selected to proceed for early (2040) delivery.	Amber
RSK002	Alterations to River Severn regulations and development of STT permitting strategy Trend: Decreasing	Amber	Risk: Understanding and agreeing how STT unsupported and supported flows are permitted to secure both the transfer of STT flows and the integrity of existing and future Severn Regulation River and the rights of other abstractors. Risk relates to SRO operation with rivers upstream and downstream of the interconnector. Particular risk identified at Gate 1 regarding the need or otherwise to amend the Acts governing River Severn relation from Lake Vyrnwy and Clywedog. Mitigation: For Gate 2 develop a "permitting roadmap" for the STT operation with river regulation, licensing, associated abstraction charges and any changes required to it as a consequence of STT. Further development of permitting requirements including the technical detail of the permit requirements would be developed for Gate 3. Amendment to 1880 Act of Parliament now appears unlikely to be required.	Green
RSK003	Commercial operation & procurement strategy development. Trend: Stable	Amber	Risk: The commercial operating models and rules between providers and users of the transferred water and the asset ownership model for STT is complex. A clear and feasible commercial strategy that is acceptable to companies and regulators needs to be developed ahead of Gate 3 to mitigate the risk of programme delay and to verify a feasible commercial model(s). Mitigation: Procurement of a commercial advisor at Gate 2 to facilitate development of a commercial strategy with the companies and the regulator. The commercial strategy identifies potential SRO "promoter", asset ownership, procurement route (e.g. DPC) and commercial operating models with further development of this required for Gate 3.	Green
RSK006	Regional/WRMP/RAPID interface – decision-making for Gate 3 SROs Trend: Stable	Red	Risk: The process and timing of decision-making between regional water resource groups, the WRMPs and RAPID and the information that it is based on needs to be aligned with a clear process that provides clarity of information and decision making for all parties, avoiding delays, stakeholder challenges and abortive work. Proceeding into Gate 3 is a significant step for the project which will require significant effort to plan and implement, with a new supply chain procurements and potentially a change in partner funding and responsibilities. Preparations for Gate 3 commencement in November 2022 are a critical path activity. Understanding how and when decisions are made by the regulator and the relationship with the finalisation of WRMP24 plans is critical to the preparations for Gate 3. Particularly the nature of RAPID's review at Gate 2 and how and when SROs may proceed into Gate 3. This may include strategies to de-risk SRO delivery and water resilience impacts by progressing multiple SROs Mitigation: Engagement is ongoing between the RAPID and STT to understand expectations for starting Gate 3 and process by which it will be managed. The STT SRO is similarly working with regional groups and companies to ensure co-ordination of information and highlight any differences. A "Mid-Gate3 Checkpoint" is proposed at the end of 2023 to ensure the development of STT is aligned with the requirements of the regional plan and RAPID. An update to regional plans to reflect any material changes in the STT proposals at Gate 2 may be required in the WRSE February 2023 upload.	Green
RSK009	Compliance with the Habitat Directive Regulation Assessment (HRA) for the Severn Estuary Trend: Decreasing	Red	Risk: Compliance risk associated with the Habitats Directive Regulation Assessment (HRA) for the Severn Estuary SAC including linked habitat (inc. Teme, Clun, Wye, Usk etc.). Mitigation: For Gate 2, an "informal" HRA assessment is required allowing for identification of uncertainties and further assessment. However, evidence "beyond all reasonable (scientific) doubt" may be required for regional plans and WRMPs. This may affect permissible direct releases into the River Vyrnwy, the treatment and/or use of Minworth treated effluent. We are engaging with regulators to work through this issue and the evidence base that would be required to demonstrate that the integrity of the estuary SAC is not compromised by the STT with the conclusions of our assessment and further work required are reported in Gate 2 documentation.	Green
RSK012	Emerging chemicals Trend: Stable	Green	Risk: A definitive approach from the risk of water quality "emerging substances" is required to ensure proposals for Gate 2 and future monitoring and assessment is developed appropriately and consistently across SROs. Uncertainty in sampling requirements may result in impacts to the gated programme and SRO development. Mitigation: The SROs have proposed a "watching brief" where sampling and investigations are maintained as currently agreed, but there is flexibility to amend this in the future based on any updated industry published guidance. We have added additional sampling to the STT monitoring regime during Gate 2 based on current industry guidance. For Gate 2 the risk has been mitigated by agreeing the sampling approach and requirements with the regulators and fixing sampling requirements based on industry guidance available at the start of Gate 2. Flexibility would be introduced at the start of future gates if industry guidance changes.	Green
RSK017	Risk to River Vyrnwy direct release Trend: Increasing	Amber	Risk: Demonstrating HRA and WFD compliance in relation to Lake Vyrnwy river regulation releases in combination with STT support may affect the extent or viability of direct releases into the River Vyrnwy. Furthermore, eDNA results from summer 2021 and autumn 21 surveys show target sequences for protected freshwater pearl mussel (FPM) and depressed river mussel (DRM). The size of direct releases will affect the capacity and discharge location of the bypass pipeline and therefore the cost effectiveness of the North West Transfer supply. Mitigation: Investigations, modelling, and assessments to determine the limit on releases into the River Vyrnwy for reporting in Gate 2. Undertake further surveys in spring 2023 to confirm viability or otherwise of mussel populations. These mitigations should address the risk and determine the appropriate level of direct release.	Green

Table 3.1: Key overarching programme risks

3.2 Discussion of key risks

Stakeholder engagement (RSK001)

- 3.2.1 There has been ongoing engagement and briefings on the transfer proposals with regulators and key statutory consultees by the STT SRO, companies and regions. This has ranged from detailed technical discussions on aspects concerning the SRO's feasibility particularly environmental issues, and to briefings to local authorities and interest groups on the overall scope and nature of the proposed STT system as an SRO option.
- 3.2.2 The impact of the SRO on Wales and Welsh stakeholders has reduced through Gate 2 development. There is no construction proposed in Wales. There is no new water required from Wales, only the use of the existing United Utilities licensed Lake Vyrnwy abstraction. Gate 2 environmental mitigations to the River Vyrnwy, with a reduction from Gate 1 in the volume of direct releases, have reduced the potential impacts. However, further engagement and working with Welsh stakeholders will remain critical to the SRO's success and ensuring compliance with Well-being of Future Generations Act and Sustainable Management of Natural Resources (SMNR) objectives.
- 3.2.3 Pending the selection of the SRO and direction to proceed into the Gate 3 pre-application DCO consenting phase, the SRO has not engaged with land owners and directly affected communities of the Interconnector and Bypass works or the general public on the detail of the construction corridors proposed. Therefore, specific areas of programme risks remain in relation to:
- i. The selection of a pipeline solution and alternatives
 - ii. The preferred corridors and identification and mitigation of local impacts associated with this
 - iii. Impacts on landowners and other affected parties and proposed mitigations
- 3.2.4 These risks will be addressed further in the Gate 3 stage starting in the Gate 3 with engagement and non-statutory consultation on route corridors and alternatives.

Permitting (RSK002)

- 3.2.5 At Gate 1, we agreed with the EA and NRW the principle of a 'put and take' operation, where water provided ('put') into the River Severn by the sources during transfer operations can be abstracted ('take') less losses for transfer into the River Thames. This 'put and take' principle is fundamental to the operation of the transfer. The formal agreement in principle to 'put and take' that has been agreed with the regulators mitigates a significant risk to the SRO's viability.
- 3.2.6 During Gate 2 we have further developed the permitting strategy and have agreed in principle the various discharge consents, abstraction and transfer licenses, and section 20 operating agreements that would be required to be modified or introduced for the STT SRO to operate as system, including support.
- 3.2.7 This work has also firmly indicated that there should not be a requirement to amend the Acts that cover the regulation for the River Severn and operation of the Clywedog and Vyrnwy reservoirs. This reduces a significant consenting and programme risk in having to obtain English and Welsh government approval of an amendment to the Act.
- 3.2.8 Further work is required to confirm the details of how:
- the SRO will work with existing licenses, including put and take arrangements.
 - the section 20 river regulation operation may need to be modified to enable the operation of supported flows. This should include consideration of the 'put and take' of support water with the existing abstractions and how this interacts with river regulation.
- 3.2.9 Whilst not as complex similar issues exist for the River Thames which will be developed in collaboration with SESRO.

Commercial operation (RSK003)

- 3.2.10 One of the principal and most complex areas of risk identified at Gate 1 for the STT system related to the development of a viable, robust commercial model. This commercial model needs to:
- recognise the complex physical and potentially phased nature of the STT system to operate within the regulatory framework and expectations.
 - Be attractive to stakeholders, providing a long-term value proposition to customers, 'buying and selling' companies and investors.
 - To address issues of ownership, financing and customer funding and trading, with a fair apportionment of risk between parties.
- 3.2.11 Gate 2 activities have started to address these issues and to develop a commercial operational and ownership approach including some early engagement with regulators. Further work will be required as the SRO progresses to develop the commercial strategy.

Environmental (RSK009)

3.2.12 The effect of the STT operation on the Rivers Vyrnwy, Avon, Severn and Thames has been the focus of significant investigations and assessment to date. Whilst we believe there are no material issues that would prevent the SRO's progression, there are areas of uncertainty and further investigation, and this will remain a significant area of ongoing development with regulators through the SRO's development.

Regional and WRMP interfaces and transition into Gate 3 (RSK006)

3.2.13 This is a short-term risk in relation to the alignment of Gated activities with the timeline of the regional and WRMP24 processes. It also covers agreement with Regulators to the funding of the SRO and partner participation going forward which is discussed further in section 4.

4 Proposals for Gate 3

4.1 SRO project scope

4.1.1 It is proposed that the overall scope of the STT SRO remains substantially unchanged for the initial phase of the Gate 3 project up to the Mid-Gate-3 Checkpoint. At high level the STT SRO scope would include:

- i. The Interconnector including intake, treatment, pumping, transmission infrastructure and outfall.
- ii. The use of the Rivers Vyrnwy, Avon, Severn and Thames to convey water to the interconnector for transfer and from the interconnector for downstream abstraction. This includes environmental investigations and assessments, permitting and river operational issues required for STT unsupported flows and support sources.
- iii. The River Vyrnwy Bypass pipeline.

4.1.2 The draft regional planning is however indicating that Shrewsbury license redeployment will be used in-region by Severn Trent and will not be available to STT. It is therefore proposed not to develop Shrewsbury redeployment at the start of Gate 3. This proposal will be verified alongside the other scope items at the Mid-Gate-3 Checkpoint.

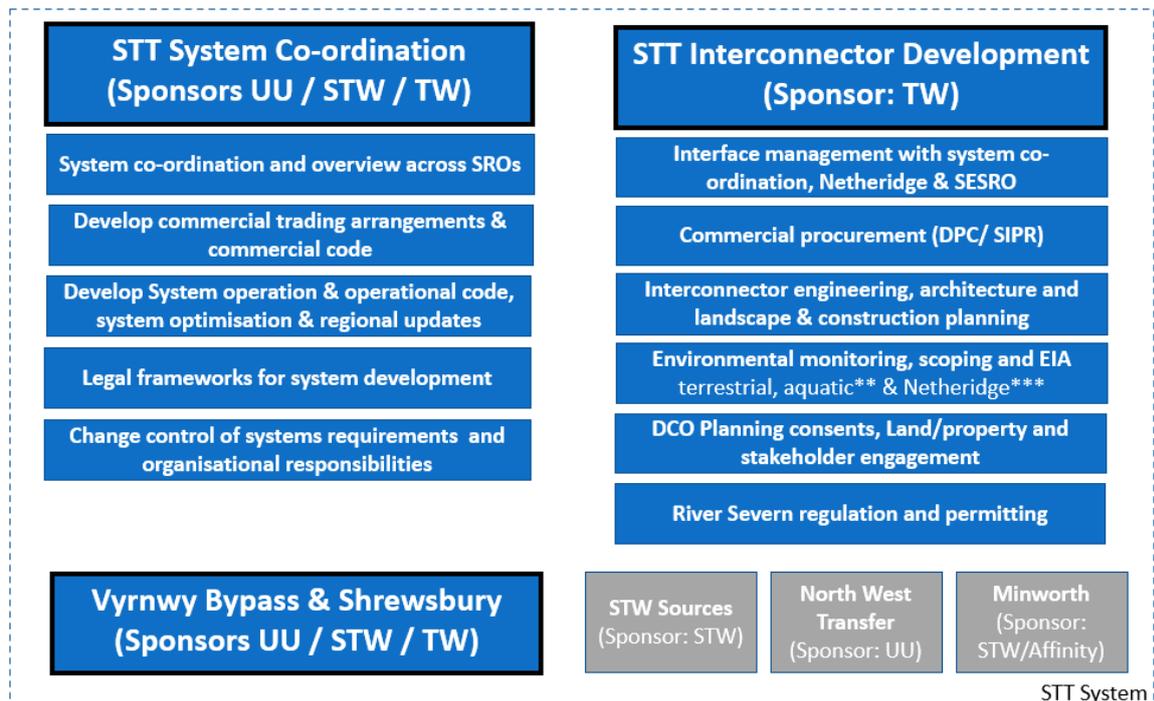
4.2 Gate 3 partner participation and accountabilities

4.2.1 Three separate Gate 3 areas of work and development have been identified, these being (i) System Co-ordination (ii) Interconnector Development and (iii) Bypass Development.

4.2.2 Company responsibility for each of these work areas is proposed as follows:

- equal joint company responsibility of STT Co-ordination activities,
- separate accountability and authority to Thames Water to develop the Interconnector,
- equal joint company development of the Bypass

4.2.3 Figure 4.1 illustrates this arrangement with the three development areas and principal activities alongside the other STT source SROs.



Key & notes

■ STT SRO ■ STT source SROs

** Includes the River Vyrnwy, Avon, Severn and Thames environmental monitoring / modelling / assessment which supports other SROs.

*** Anticipated interfaces with STW Sources SRO if Netheridge becomes 'associated development' as part of Interconnector DCO.

Figure 4.1: Proposed Gate 3 STT SRO structure

4.2.4 A key feature of this arrangement is:

- i. Maintaining joint participation and collaboration between the principal donor and recipient companies with continued joint working and partnership between the partners for system coordination and bypass areas.
- ii. Providing Thames Water autonomy to manage the delivery of the DCO and DPC elements of the Interconnector and river conveyance and to be fully accountable for this element as the proposed promoter of the interconnector. This also allows Thames Water to implement a programmatic approach to the SRO delivery alongside its other major SRO's.

4.2.5 The bypass whilst intrinsic to the provision of support water from Lake Vyrnwy via the North West Transfer SRO, is constructed wholly in Severn Trent Water's geographic area and potentially could provide benefits to Severn Trent and Thames Water, as well as other companies in the South East. At this stage, it is proposed that the bypass continues to be developed jointly by the three STT partner companies.

4.2.6 Thames Water's accountability for the interconnector aligns with the Gate 2 commercial workstream which has identified that the promoter of the Interconnector would be Thames Water as the main beneficiary of the STT water.

- 4.2.7 As well as benefits to Thames Water, the draft regional water resource planning is also indicating potential benefits of the STT system to Affinity Water and Southern Water. During Gate 3 the STT team will consult and engage with these and any other potential beneficiaries and agree their future involvement. Any changes in partner participation will be proposed at the Mid-Gate3 Checkpoint.
- 4.2.8 Funding arrangements for Gate 3 are described further within the efficiency of expenditure and forecast section of the Gate 2 main report and annex.

4.3 Timeline and interim 'Mid-Gate 3 Checkpoint'

- 4.3.1 As set out in the chapter 2 of this report the indicative timing of the gates based on the RAPID requirements would be as follows:

Milestone / activity	Timing and duration**
Gate 3 A firm single, potentially scalable, option including locations.	Nov 2022 to Q1 2025, ~2.5 years
<i>Mid-Gate 3 Checkpoint</i> Decision on SRO progression informed by final regional & WRMP24 plans. Firm-up Gate 3 participation and funding.	Nov 2022 to Dec 2023, 1 year
Gate 4 Ready for DCO application and DPC tendering (PQQ / ITT)	Q2 2025 to Q3 2026, ~ 1.5 years
** date quarters are for calendar years, e.g., Q1 is January to March.	

Table 4.5: Gate 3 and Gate 4 summary

4.3.2 Figure 4.2 illustrates the overall timeline and activities

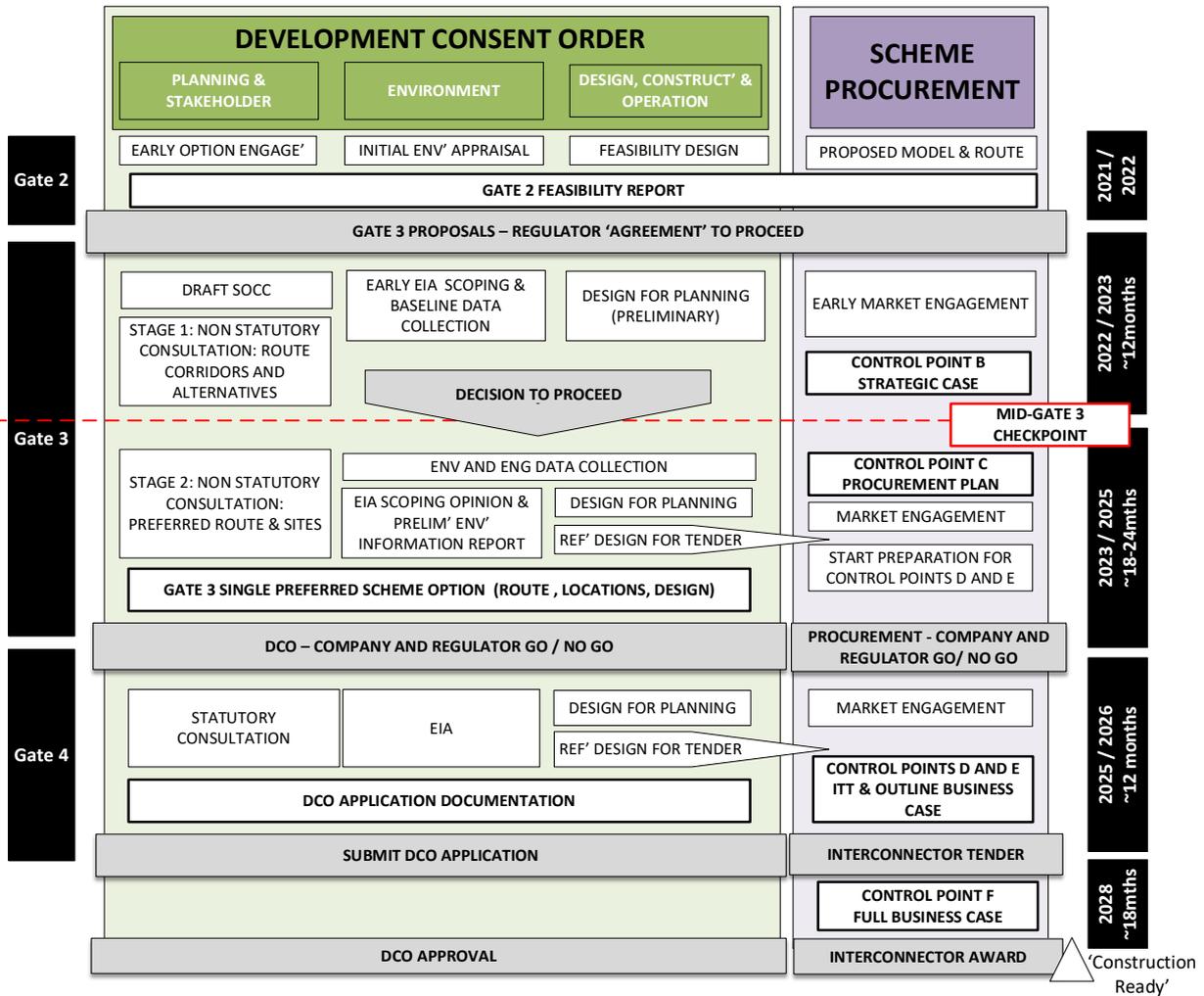


Figure 4.2: Overview of Gated activities

4.3.3 The RAPID guidance for Gate 2 sets out that: *'By gate three, solution owners should have narrowed down their solution to a firm single, potentially scalable, option including location as included in final regional plans and WRMPs. This means that pre-planning application consultation should have been completed.'*

4.3.4 To achieve this, we believe will require two stages of consultation alongside environmental, land, engineering and construction investigations and development. This will require a circa

2.5-year period for Gate 3. Note, we have not included statutory consultation in Gate 3, with this programmed for Gate 4.

- 4.3.5 However, it should be noted that unlike Gates 1 and 2, the timing of Gate 3 and 4 can only be indicative at this stage as they are tied to the DCO pre-application process including public engagement and durations may vary depending on the feedback received.
- 4.3.6 The approach in Gate 3 and Gate 4 needs to focus on doing what is necessary to achieve a successful DCO application first time and de-risk the rejection of the application. Therefore, we believe the Gated timelines should remain flexible.
- 4.3.7 Chapter 2 of this report sets out the concept of a Mid-Gate 3 Checkpoint for STT. The purpose of introducing this Mid-Gate 3 Checkpoint at the end of 2023 is to:
 - i. Decide if STT needs to proceed and what pace. This will be informed by:
 - the approved final regional and WRMP plans
 - any regulator input into the requirement to progress the SRO
 - ii. Allow any adjustment in project scope (e.g by-pass), partner participation and agreed funding between Gate 3 and Gate 4 to be made.
- 4.3.8 The Mid-Gate 3 Checkpoint should not be viewed as 'mini regulatory gate submission' but rather as a short governance process between RAPID and the STT partners to make any formal adjustments required to the direction of the SRO.

4.4 Gate 3 activities

- 4.4.1 This section outlines at high-level the proposed activities for the period through to the Mid Gate 3 Checkpoint, separated into System Coordination, Vyrnwy Bypass and Interconnector development work areas. Activities are presented using the RAPID work breakdown structure (WBS).
- 4.4.2 The extent and pace of activities after the Mid-Gate 3 Checkpoint will be governed by decisions made at the Checkpoint and will be set out at that time in order to meet required objectives.

- 4.4.3 As noted above, it is not proposed as part of the initial Gate 3 STT SRO activities to undertake any significant further development of the Shrewsbury source. This will be reviewed again at the Mid Gate 3 Checkpoint.
- 4.4.4 A summary of the principal activities under the System Coordination, Vyrnwy Bypass, and Interconnector Development functions through to the Mid-Gate 3 Checkpoint are summarised in the tables 4.6, 4.7 and 4.8.
- 4.4.5 The activities are indicative of the work required but will be subject to further development at the start of Gate 3.
- 4.4.6 On balance, it is proposed that the river environmental monitoring and assessments, river permitting and drinking water risk assessment work will reside in the Interconnector Development function scope, as these activities feed directly into the DCO submission documentation. However, it also recognised that these activities also support the wider STT system and feed into other STT SROs. The management of these activities will be needed to ensure the needs of both the Interconnector DCO development and other SROs are met.

System Coordination	
Accountability: United Utilities, Severn Trent, Thames Water	
WBS	Key tasks through Gate 3
Programme and Project Management	Joint programme governance and inter-company working
	Project management and coordination, including cross-SRO working and collaboration; and programme, risk, cost control, change management and reporting.
	Level 2 technical assurance appropriate to this Mid-Gate 3 Checkpoint stage
Feasibility assessment and concept design	Systemwide technical lead including technical management of interfaces between STT interconnector, Bypass, STT sources, downstream SROs and other potential water users; overall system development and requirements definition.
	System optimisation – refinements and optimisation of resources and operation associated with the STT System. Include utilisation and development of the Pywr STT System model system model as the Gate 3 'digital twin'.
	System Operating and control philosophy development - Operational system control philosophy including operational scenario modelling using Pywr System model and other tools.
Options benefit development and appraisal	Water resources development – inputs and updates to regional and company WRMP24 plans
Environmental assessment	Cross SRO Co-ordination – facilitate and ensure consistency of approach, and the timely and efficient provision of information between SROs. Particularly the information from the Interconnector River assessments, water quality sampling and other river related activities being developed by the Interconnector which supports other SROs
Data collection, sampling and pilot trials	None currently proposed.
Procurement strategy	Commercial operating model - Development of commercial trading arrangements between sellers and buyers working closely with Ofwat/ RAPID.
Planning strategy	No activities proposed. Covered under Interconnector and Bypass
Stakeholder engagement	Stakeholder engagement support – facilitate and support stakeholder engagement between the three companies and within regions, and respond to requests in connection with the STT from others
Legal	Ad hoc advice and intercompany agreements required for Gate 3 and Gate 4 inter-company working.
Other	Other third-party costs
	Preparation for tasks beyond the Mid Gate 3 Checkpoint and G4 activities

Table 4.6: System Coordination activities through to Mid-Gate 3 Checkpoint

Vyrnwy Bypass	
Accountability: United Utilities, Severn Trent, Thames Water	
WBS	Key tasks through Gate 3
Programme and Project Management	Joint programme governance and inter-company working
	Project management including programme, risk, cost control, change management and reporting
	Level 2 technical assurance appropriate to this Mid-Gate 3 Checkpoint stage
Feasibility assessment and concept design	Design development of the Vyrnwy bypass pipeline alignment corridor and 'reference design for planning' including construction logistics requirements.
	Construction Design and Management Regulations (CDM) Principal Designer
Options benefit development and appraisal	Phasing and scalability – investigate options for phasing the bypass construction to match potential early use of flows below 180 MI/d and any options resulting from refinements to the River Vyrnwy direct release.
Environmental assessment	Support bypass design and options development , and plan of work should Bypass proceed past the Mid-Gate 3 Checkpoint. including any options resulting from refinements to the River Vyrnwy direct release.
Data collection, sampling and pilot trials	Environmental monitoring and investigations for the bypass corridor and prepare scope of engineering investigations post checkpoint.
Procurement strategy	Development of the Gate 2 procurement proposals for the bypass to provide greater certainty on the bypass prompter and form of procurement (e.g., DPC)
Planning strategy (and land)	Develop post Gate 2 planning and consents and land strategy Support permitting strategy being undertaken by Interconnector team and support stakeholder strategy and engagements with local authorities.
Stakeholder engagement	Undertake informal engagement with key stakeholders potentially affected by the corridor routing and prepare post Mid Gate3 Checkpoint engagement plans.
Legal	Ad hoc legal advice and reviews
Other	Other third-party costs
	Preparation for tasks beyond the Mid Gate 3 Checkpoint and G4 activities
Note, it is not proposed as part of the initial Gate 3 STT SRO activities to undertake any significant further development of the Shrewsbury redeployment source. This will be reviewed again at the Mid Gate 3 Checkpoint and if required included.	

Table 4.7: Vyrnwy Bypass activities through to Mid-Gate 3 Checkpoint

Interconnector Development Accountability: Thames Water	
WBS	Key tasks through Gate 3
Programme and Project Management	Programme governance, steering and oversight
	Project management and coordination
	PMO support function for programme, risk, cost control change and reporting
	Assurance - Level 2 technical assurance of outputs
	Systems engineering - Development of digital services and systems to support delivery
Feasibility assessment and concept design	Interconnector engineering lead design consultant
	Construction Design and Management Regulations (CDM) Principal Designer – includes oversight of system coordination design activities
	Construction planning – planning and scoping of construction activities and phasing, logistics, haul roads, compounds, etc to support engagement and consultation activities. Limited activity prior to Mid-Gate 3 Checkpoint
	Traffic and transport modelling & management – working closely with construction planning team to develop traffic management plans for interconnector construction. These will need to be developed further if the SRO progresses past the Mid-Gate 3 Checkpoint.
	Design principles development
	Architecture and landscape (A&L) – development of early design concepts for permanent works treatment of above ground structures to support engagement and consultation activities. Limited activity prior to Mid-Gate 3 Checkpoint.
	Interconnector technical coordination - includes technical multidisciplinary management including environmental and system interfaces affecting the interconnector.
	Engineering, architecture & landscape, and construction related engagement & consultation materials - Preparation of material for stakeholder engagement and consultation support
	Progress and update drinking water safety risk assessments – includes assessment of support option inputs and requires cross SRO working
	Interconnector operating philosophy – interfaces with overall system operation
River regulation – development of technical aspects of developing permits, section 20 and river regulation amendments. This will entail close working with EA and NRW.	
Options benefit development and appraisal	Develop route corridors and structures of preferred option in response to engagement and consultation including ‘back-checking’ against non-preferred options. Limited activity prior to Mid-Gate 3 Checkpoint.
Environmental assessment	Lead environmental consultant
	Development of EIA scoping
	Environmental engagement & consultation materials - development of consultation material & support stakeholder engagement and consultation
	Environmental modelling activities

Interconnector Development	
Accountability: Thames Water	
WBS	Key tasks through Gate 3
	Environmental assessment and mitigation development
	Regulator costs (NAU, EA, NRW, NE)
Data collection, sampling and pilot trials	Engineering data collection - to include plan for investigation and initial limited geotechnical studies and GI works and critical services surveys if programme requires these ahead of the Mid Gate 3 Checkpoint.
	Environmental surveys – aquatic, terrestrial ecology surveys, water quality and other environmental topic surveys
Procurement strategy	Complete control point B - Strategic business case
	Early market testing/engagement
	Development of procurement model and preparation for control point C
	Commercial operation – support Systems Coordination function to develop trading model.
Planning strategy	Develop planning and land strategy
	Land referencing activities required for initial engagement activities and planning
	Develop secondary permits and licences agreements
	Draft statement of community consultation
	Support consultation and engagement activities and lead planning authority engagement activities
	LPA costs (PPA)
Stakeholder engagement	Stakeholder management - Develop stakeholder engagement plan and manage engagement and consultation activities.
	Stage 1 engagement / consultation
	Lead customer research and engagement activities
	Support stakeholder engagement
Legal	Provide ongoing legal advice including support of DCO process
Other	Other third-party costs
	Preparation for tasks beyond Mid-Gate 3 Checkpoint and G4 activities

Table 4.8: System Integration activities through to Mid-Gate 3 Checkpoint

4.4.7 Following the Mid-Gate 3 Checkpoint, should the decision be made to progress the STT SRO to be 'construction ready' in the AMP 8 programme then further activities would include:

- Continuation of System coordination activities** to support the development of the overall system. The level of effort required in the system activities would depend on the status of the source support SRO and their development programme.
- Interconnection development** including:
 - Implementing findings from stage 1 engagement
 - Continuation of environmental investigations and assessments
 - Design and construction planning

- Site investigations
- Detailed land referencing
- Stakeholder informal engagement
- Route and site selection of preferred scheme
- Stage 2 engagement / consultation on a preferred scheme
- DPC control point C submission and commencement of activities for control points D and E.
- Gate 3 reporting to RAPID and decision to proceed or otherwise with the next steps in the DCO and DPC procurement.

4.4.8 Similarly if the bypass were identified for early delivery either in support of STT or provision of water into Water Resources West region, then activities similar to the interconnector would be required to achieve planning consents and procurement timelines.