Annex H: Efficiency of Gate 2 Expenditure

Standard Gate two submission for London Water Recycling SRO

Notice – Position Statement

This document has been produced as the part of the process set out by RAPID for the development of the Strategic Resource Options (SROs). This is a regulatory gated process allowing there to be control and appropriate scrutiny on the activities that are undertaken by the water companies to investigate and develop efficient solutions on behalf of customers to meet future drought resilience challenges.

This report forms part of suite of documents that make up the 'Gate 2 submission.' That submission details all the work undertaken by Thames Water in the ongoing development of the proposed SRO. The intention at this stage is to provide RAPID with an update on the concept design, feasibility, cost estimates and programme for the schemes, allowing decisions to be made on their progress.

Should a scheme be selected and confirmed in the Thames Water final Water Resources Management Plan (WRMP), in most cases it would need to enter a separate process to gain permission to build and run the final solution. That could be through either the Town and Country Planning Act 1990 or the Planning Act 2008 development consent order process. Both options require the designs to be fully appraised and, in most cases, an environmental statement to be produced. Where required that statement sets out the likely environmental impacts and what mitigation is required.

Community and stakeholder engagement is crucial to the development of the SROs. Some high-level activity has been undertaken to date. Much more detailed community engagement and formal consultation is required on all the schemes at the appropriate point. Before applying for permission Thames Water will need to demonstrate that they have presented information about the proposals to the community, gathered feedback and considered the views of stakeholders. We will have regard to that feedback and, where possible, make changes to the designs as a result.

The SROs are at a very early stage of development, despite some options having been considered for several years. The details set out in the Gate 2 documents are still at a formative stage.

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 statutory duties. The information presented relates to material or data which is still in the course of completion. Should the solutions presented in this document be taken forward, Thames Water will be subject to the statutory duties pursuant to the necessary consenting process, including environmental assessment and consultation as required. This document should be read with those duties in mind.

Contents

1. Introduction

1.1. This annex provides details of our expenditure on the London Water Recycling Strategic Resource Option (SRO) (previously known as the London Effluent Reuse SRO) which comprises of four schemes being progressed through the Regulatory Alliance for Progressing Infrastructure Development (RAPID) Gate 2 process by Thames Water.

1.2. Four schemes of varying capacity and sizes make up the SRO progressed to Gate 2. The SRO contains Thames Water only schemes with no other water companies involved. Full details of these schemes are provided in the concept design reports for the schemes (annex A1-A4) which include the following:

- Mogden Water Recycling scheme;
- Mogden South Sewer scheme;
- Teddington Direct River Abstraction (DRA) scheme; and,
- Beckton Water Recycling scheme.

1.3. The overall structure of this annex is as follows:

- Section 2 documents the procurement approach taken to the support services required for Gate 2, including shared procurement between integrated SROs, and how this has driven efficiency into the programme, change control & delivery to budget.
- Section 3 provides the breakdown of our expenditure to Gate 2. All costs presented have been adjusted to reflect a 2017/18 price base.
- Section 4 provides the breakdown of the proposed costs to Gate 3, based around RAPIDs Work Breakdown Structure (WBS) issued at Gate 2 and adjusted to reflect a 2017/18 price base.

2. Framework for ensuring efficient spend

2.1. The efficiency of spend to Gate 2 has been assured through the application of a series of controls throughout the procurement, delivery and reporting of the required technical services. These include:

- Ensuring alignment between the activities listed in Annex 2 of Price Review 19 (PR19) Final Determination, RAPID Gate 2 guidance and WBS, and our work packages and scope initiated.
- Engaging early and continuously through Gate 2 with stakeholders including the National Appraisal Unit (NAU), Environment Agency (EA) and Natural England (NE) to agree a proportional evidence base of surveys and modelling for assessment at Gate 2
- The agreement of modelling and assessment methods and the sharing of methodologies across SROs.
- Delivery of elements of scope by Thames Water staff or secondees where relevant expertise existed ensuring direct control of scope, quality and cost.
- Agreement of a standardised procurement process across SROs and clearly scoped work packages.

- Application of competitive procurement approaches, wherever new work was required.
- Procurement across SROs, for aligned work packages.
- Robust change control processes and delivery to estimated budgets. The application of robust controls by the Project Manager and overseen by the Programme Management Board (PMB) helps prevent 'scope creep' and cost escalation.
- Benchmarking of costs through competitive tender or comparisons of similar scopes of work with other Thames Water SROs.
- External assurance of our approach.

Scope and programme definition and implementation

2.2. Within each WBS the project management team (consisting of the programme manager and Thames Water staff) prepared a scope of works reflecting the desired outcomes and objectives for Gate 2 that also incorporated any feedback from Gate 1 to develop the SRO in-line with the objectives set-out by RAPID and advance scheme understanding.

2.3. These scopes then supported the development of a programme for the future planning, design development and promotion through Gate 2.

2.4. Where expertise existed either within the project team or within Thames Water certain elements of work were delivered 'in-house' and therefore without the need for external procurement. This resulted in direct control of quality, consistency and costs. Significant elements of our technical engagement were undertaken in-house through Gate 2, for example the project manager chaired all meetings with the NAU and lead engagement with local planning authorities.

2.5. We engaged early with the NAU, EA and NE to seek feedback and agree survey scopes, evidence, modelling scenarios, and assessment methods. Furthermore, we also engaged with the Port of London Authority to seek feedback on our planned work.

2.6. All assessments have used Water Resource South East (WRSE) and/or the All Company Working Group (ACWG) methodologies where they exist to ensure consistency. Wherever possible we incorporated any additional expectations from a regulatory perspective into our work plan for Gate 2.

2.7. The ACWG and regulators procured a range of technical methodologies to help consistency and have been applied across the SROs, providing standard approaches, tools and report templates. These included:

- Cost consistency – Mott MacDonald, Aug 2020, "Cost Consistency Methodology, Technical Note and Methodology"
- Drinking water quality risk assessment – Jacobs, "Strategic WQ Risk Framework"
- Environmental appraisal- Mott MacDonald, Oct 2020, "WRMP environmental assessment guidance and applicability with SROs"
- Water Framework Compliance assessment – Mott MacDonald, Nov 2020, "Water Framework Directive: Consistent framework for undertaking no deterioration assessments"

- Gate 2 Environmental Appraisal – Cumulative effects methodology, Mott MacDonald, April 2022.
- Carbon assessments 'ACWG Carbon Ambition – SRO low capital carbon alternatives' – Mott MacDonald, draft August 2022
- Invasive non-native species (INNS) risk assessment tool (SAI-RAT) – Produced by APEM on behalf of the Environment Agency.
- Natural England (2021) Biodiversity Net Gain Metric 3.0 – Calculation Tool – Natural England (2021

2.8. In addition to these the SRO team also prepared bespoke methods based on wider generic guidance to ensure consistency but allowing for the specifics of the location of the SRO schemes to be taken into consideration. Where appropriate these methods were shared with the NAU and approach agreed. These methods included:

- Initial Environmental Appraisal methodology for Gate 2[1] prepared by Ricardo.
- Site selection and options appraisal methodology based on the appraisal undertaken by Thames to Southern Transfer SRO at RAPID Gate 1.
- Ecological compensation site selection criteria prepared by Ricardo.

2.9. These methodologies have been applied by consultants in the preparation of our Gate 2 submission. This has driven efficiency into the process through:

- The application of the shared methodology reduces the amount of technical work effort required by each SRO. Standard tools, templates and spreadsheets were provided, preventing supplication of effort, and outputs could be easily standardised to these.
- By using a standard approach, the results are more easily comparable across SROs (and between options within an SRO) reducing technical work effort and reporting costs.
- The standardisation helps prevent the need to assure bespoke methodologies across all SROs, driving consistency with other SROs for Gate 2 submission.

2.10. The outcomes from our work through Gate 2 ensured we defined an appropriate and proportional programme that used comparable and consistent methodologies and assumptions to develop the schemes for progression into Gate 3 where applicable.

Commonality across SROs

2.11. A number of work packages were identified early in the programme as being common across SROs and as such all the Thames Water appointed programme managers worked closely in the development of scope and procurement to ensure consistency and efficiencies could be captured.

2.12. This included efficiencies through procuring one contract geographically across the SROs removing duplication and synergies in procuring / awarding work to a consultant pan-SRO (reducing duplication in mobilisation and planning costs for example).

[1] London Reuse SRO – Gate 2 Initial Environmental Appraisal: Methodology – May 2022, Ricardo Energy and Environment.

2.13. The cross-SRO procurement packages included:

- Water quality sampling resulting in savings on management, logistics (including survey mobilisation), technical oversight and reporting
- Fluvial water quality modelling in the River Thames resulting in cost saving in delivery and ensuring consistent use of models across SROs.
- Algae sampling and experiments resulting in savings from logistics and equipment set-up and purchase.
- Water resource modelling ensuring consistency across SROs.
- Customer research and engagement activities across SROs and water companies ensuring consistency and management and reporting cost savings.
- River Thames licencing strategy ensuring consistency across SROs and cost savings from a single licencing approach.
- Commercial and procurement strategy with resultant savings on workshop management, coordination and consistency between SROs along with alignment of procurement programmes.
- Legal support with resultant savings on reporting and consistency of approach.

Procurement activities

2.14. We have applied three key principles to ensure efficient procurement of work packages for Gate 2:

- The application of a standardised procurement process.
- The application of a competitive procurement process wherever new work had been identified.
- Procurement across SROs for aligned work packages to ensure consistency and value across common tasks.

2.15. Where new work was tendered, competitive procurement was undertaken in accordance with an established and pre-existing Framework agreement (such as FA1300) between Thames Water and a number of different consultants.

2.16. This competitive tendering exercise allowed Thames Water to select consultants based on a criteria covering quality and cost. The weighting of quality versus cost was based on the technical complexity of each work package and the expertise required to deliver. Overall, this approach ensured the most commercially advantageous procurement for the SRO programme, balancing cost efficiency against the need for a high-quality output. This process also allowed benchmarking of cost between competing consultants.

2.17. Overall, >80% of the value of the external support services has been procured using competitive approaches through Gate 1 and Gate 2, either under a competitively tendered framework or competitive mini-bid process ensuring the awarded work was benchmarked against other offers / rates and balancing cost and quality.

2.18. Table 2.1 lists the main procurement undertaken for Gate 2.

Annex H: Efficiency of Gate 2 expenditure

Table 2.1: Procurement activities through Gate 2

Work Package	Procurement approach	Comments
WP1: Environmental consultant	Direct award to existing framework supplier (FA1300, Lot 3), hence staff rates used had previously been through a competitive tender process to win place on framework. Work was competitively bid by the Framework suppliers at Gate 1.	Desire to achieve technical continuity and efficiency with Gate 1 team, reduce downtime for mobilisation of new supplier and retain knowledge
WP2 – water resources modelling	Direct award to existing framework supplier (FA1300, Lot 3), hence staff rates used had previously been through a competitive tender process to win place on framework.	Desire to achieve technical continuity and efficiency with Gate 1 (and WRSE) modelling team; highly specialised services
WP3: Drinking water safety plan	Direct award to existing framework supplier (FA1300, Lot 1), hence staff rates used had previously been through a competitive tender process to win place on framework. Work was competitively bid by the Framework suppliers at Gate 1	Direct award based on supplier leading ACWG methodology for Drinking Water Safety Plans
WP4: Terrestrial ecology surveys	Mini-bid at start of Gate 2 under Framework (FA1300, Lot 3). Award based on quality and price.	New supplier appointed to delivery ecology surveys for Gate 2 with mini-bid process demonstrating benchmarking of services
WP5 – water quality monitoring	Direct award to existing framework supplier (FA1300, Lot 3), hence staff rates used had previously been through a competitive tender process to win place on framework. Efficient procurement across multiple SROs covering wide survey area (Severn, Thames and Lea Valley) to benefit multiple projects. Work was competitively bid by the Framework suppliers at Gate 1.	Desire to achieve technical continuity and efficiency with Gate 1 team (maintain consistency in survey locations, methodologies and permissions)
WP6: Physical environment surveys	Mini-bid at start of Gate 2 under Framework (FA1300, Lot 3). Award based on quality or price.	New supplier appointed based on outcome of mini-bid against quality and cost.
WP7a: Thames Tideway 3D modelling	Direct award to specialist contractor who previously prepared a calibrated and validate 3D model for the Tideway.	Desire to achieve technical continuity and efficiency with Gate 1 and wider modelling approaches within the Thames Tideway
WP7b: River Thames fluvial 2D modelling	Direct award to specialist contractor who previously prepared a calibrated and validate model.	Desire to achieve technical continuity and efficiency with Gate 1
WP8 – algal experiments	Direct award to specialist supplier, limited available competition due to the highly specialised nature of the work.	Work procured on behalf of all Thames SROs to help drive efficiency in delivery and reporting.
WP9 – Fisheries	Mini-bid at start of Gate 2 under Framework (FA1300, Lot 3). Award based on quality or price.	Gate 1 supplier retained for Gate 2 and mini-bid demonstrated benchmarking of services

WP10: Other aquatic surveys	Mini-bid at start of Gate 2 under Framework (FA1300, Lot 3). Award based on quality or price.	Gate 1 supplier retained for Gate 2 and mini-bid demonstrated benchmarking of services
WP11: Project management	Extension to Gate 1 competitive mini-tender process via existing professional services framework. Procurement of single Programme Manager to manage four schemes within the SRO to ensure efficient delivery.	Desire to achieve technical continuity and efficiency from Gate 1
WP12 – engineering consultant	Direct award to existing framework supplier (FA1300, Lot 1), hence staff rates used had previously been through a competitive tender process to win place on framework. Work was competitively bid by the Framework suppliers at Gate 1	Desire to achieve technical continuity and efficiency with Gate 1 team, reduce downtime for mobilisation of new supplier and retain knowledge
WP13: commercial and procurement	Competitive mini-tender under existing Thames Water framework (FA1300, Lot 1), 2 tenderers	Work procured on behalf of 3 No. Thames Water SROs to help drive efficiency in delivery and reporting.
WP14: Planning and land strategy	Mini-bid at start of Gate 2 using 'Providers of Planning Studies Services & planning reports for Major Projects Framework'. Award based on quality and price.	New supplier appointed for the delivery of planning services from Gate 2. Mini-bid process demonstrated benchmarking of services
WP15: GIS and CDE services	Direct award to existing framework supplier (FA1300, Lot 1), hence staff rates used had previously been through a competitive tender process to win place on framework.	Desire to achieve technical continuity and efficiency with Gate 1 team, reduce downtime for mobilisation of new supplier and retain knowledge
WP16&17: Customer research / engagement	Competitive tender, 4 tenderers; Procurement on behalf of all WRSE Companies to ensure consistency and efficiency in delivery of work package	Costs subsequently assigned pro-rata across all WRSE Companies and associated SROs
WP18 – legal support	Competitive tender to appoint Combined External Legal Team (CELT) across Thames Water; work packages direct awarded under this framework	CELT deliver work packages on a 'best person for the job' to ensure quality of product; work packages generally let across multiple SROs
Project Management Office (PMO) team setup	Competitive tender through FA1491 AMP7 Delivery Partner PMO Framework Agreement.	Awarded based on cost and quality. Resources appointed from multiple suppliers.

Refinement of Procured Scope

2.19. We undertook a number of activities to refine and rationalise the work for Gate 2 through 2021 and 2022, these included:

- Periodically reviewing survey data and modelling outputs to ensure data collection was focussed in areas where it was required to support future assessments.
- Further refinement or re-focussing of scope (surveys and modelling) based on technical engagement with stakeholders. This included modelling of different size

variants of Teddington and Mogden schemes at the request of the NAU to understand the risk of significant effects and potential breaches in guidance / legislation.

- Refining of work scopes as scheme design developed with focussed modelling in areas that address the critical issues and reflect the outputs from iterations of the south-east (SE) regional plan.
- Rationalising work scope wherever possible. We paused the direct design development of the Mogden South Sewer scheme through Gate 2 as it became clear there were limited benefits to continue developing the scheme at this stage. A full explanation is provided in Annex F (scheme delivery plan).
- Revised work scopes to incorporate or utilise work done previously for Thames Water that remain relevant. For example, we have utilised ecology reports prepared for Thames Water by 3rd parties in 2021 at Lockwood pumping station and Coppermills water treatment works – both locations represent key areas for a Beckton and these reports avoided duplication of survey effort.
- Continually reviewing the progression of schemes and options with developing design maturity. We were able to recommend early in 2022 the removal of a Beckton pipeline conveyance sub-option[2,3] once the option was deemed not viable to continue, resulting in savings of c. £100k from continued development.
- Close liaison with RAPID throughout Gate 2 with the sharing of planned activities and adjustment of work (additions and removal) to support emerging outputs from the emerging SE regional plan.

3. Gate 2 costs

3.1. The Final Determination maximum cost allowance for the SRO was £62.9m, with a 15% allocation to Gate 2 equating to £9.4m.

3.2. RAPID confirmed in the Final Decision at Gate 1[4] that savings made against Gate 1 allowance could be carried over into Gate 2. Our Gate 1 expenditure was £2.5m against a Gate 1 allowance of £6.2m. Our combined Gate 2 allowance therefore totals £13.1m.

3.3. Our Gate 2 expenditure is shown in table 3.2 against the WBS provided by RAPID. We anticipate that our Gate 2 outturn will be approximately £5.7m for Gate 2 and equates to approximately 44% of our budget allowance.

3.4. For accurate comparison with the Final Determination allowance, as requested by RAPID, costs have been deflated back to a 2017/18 cost base using Thames Water's Internal Business Plan (IBP) deflationary factors, based upon the CPIH (November 2019 dataset) (table 3.1).

[2] https://www.ofwat.gov.uk/wp-content/uploads/2022/05/Thames-Water-letter-to-RAPID-Beckton-pipeline-route-rejection-version2.1.pdf
[3] https://www.ofwat.gov.uk/wp-content/uploads/2022/05/Letter-from-Paul-Hickey-to-Rob-Bromley-20-May_2022.pdf

[4] Standard-gate-one-final-decision-for-London-Effluent-Reuse.pdf (ofwat.gov.uk)

Table 3.1: Deflationary factors used for actual cost calculations

AMP7	Deflation Factors
Year 1 (2020/21)	0.9469
Year 2 (2021/22)	0.9283
Year 3 (2022/23)	0.9102

3.5. All activities planned through Gate 1 were completed within that period and no activities were 'rolled-over' in to Gate 2. All work planned for Gate 2 has been completed and results used to inform the conceptual designs, modelling and assessments presented in our Gate 2 submission. Our work has built on work undertaken for WRMP19 and Gate 1 and has not included any WRMP24 business as usual activities.

3.6. In discussion with RAPID a number of additional activities have been progressed through summer and autumn 2022 to enhance future scheme delivery and support early planning and procurement activities within Gate 3 for schemes selected early in the regional plan. This work termed Gate 2+, commenced with work and surveys for Beckton and Teddington schemes based on the emerging regional plan. Amendments to the scope were made in September 2022 to cover only the Teddington scheme once the draft best value regional plan was available. This rationalisation of work further supports our drive to demonstrate our efficiency of spend.

3.7. The Gate 2+ costs are incorporated within the WBS costs shown in table 3.2, however, it should be noted that our Gate 2+ work has not been reported within our Gate 2 submission owing to the period of time required to assure deliverables. Our intention is to provide a summary report of these activities and outputs during the Gate 2 representation period early in 2023.

3.8. Furthermore, a number of survey activities will continue throughout 2022 based on survey duration and frequency agreed with the NAU (for example monthly water quality surveys). All costs for this work undertaken in the period representing Gate 2 has been included in table 3.2.

3.9. As per Gate 1, a capital overhead cost has been applied in accordance with company specific rules. This on-cost enables overhead recovery to be applied pro-rata across all CAPEX spend and covers Thames Water staff supporting the delivery of the SRO.

3.10. We have also included within our cost the establishment of a client PMO team to manage the range of SRO projects from Gate 3. During Gate 2, this team has been engaged in the development, review and assurance of the Gate 2 submission, the development of plans for Gate 3 and the procurement of ongoing consultancy support across the Thames Water SRO portfolio. For Gate 2, the cost to the London water recycling schemes for this team to August (period of Gate 2 activity) is captured within the Programme and Project Management WBS in Table 3.2. Costs incurred for Gate 3 are not included and as agreed with RAPID will be presented at Gate 3.

Table 3.2: Gate 2 costs for London Water Recycling SRO calculated on a 2017/18 price base

WBS	Activity	Expenditure (£, 2017/18 prices)	% of total allowance	Description of Activity
Programme & Project Management	**Sub-Total**	**£516,220**	**9%**	
	Programme manager and cost control	£245,205		Programme, project and cost management of SRO through Gate 2
	PMB and executive management	£167,772		Company PMB governance, management activities and PMO assurance of Gate 2 deliverables within Thames Water
	Assurance activity	£103,244		External 2nd line and 3rd line assurance consultants
Feasibility assessment and concept design	**Sub-Total**	**£1,105,322**	**19%**	
	Engineering lead and Principal Designer (PD) for schemes	£110,532		Engineering lead consultant managing workstream, supporting engagement and reviewing deliverables.
	Beckton Concept Design Report (CDR)	£165,798		Production of concept design with supporting process engineering for Beckton
	Mogden CDR	£132,639		Production of concept design with supporting process engineering for Mogden
	South Sewer CDR	£88,426		Update of Gate 1 concept design for South Sewer
	Teddington CDR	£154,745		Production of concept design with supporting process engineering for Teddington
	Cost and carbon analysis	£121,585		Calculation, analysis and reporting of cost and carbon for the SRO
	Assessment of alternatives	£88,426		Investigation of option configurations and site and route selection appraisal
	GIS implementation	£33,160		Hosting a GIS system for the SRO
	Gate 2+ engineering activities	£210,011		Development of engineering understanding to support EIA scoping for Teddington as notified to RAPID
Options benefit development and appraisal	**Sub-Total**	**£86,859**	**2%**	Water resources modelling, DO assessment, WRSE investment modelling
Environmental assessment	**Sub-Total**	**£1,553,289**	**27%**	
	Third party costs - NAU, EA, NE	£432,533		Regulator cost for Gate 2
	Environmental and engagement lead	£207,340		Environmental lead consultant managing workstream, leading technical engagement and reviewing deliverables. PD in compliance with CDM regs
	Environmental assessments and mitigations	£297,000		Evidence based reporting and assessment including in-combination and identification of risk and mitigations. Scope of work influenced by NAU.
	Regulatory assessment and reporting	£179,321		Gate 2 regulatory reports
	Modelling activities	£240,962		Aquatic modelling activities to provide evidence-base for impact assessment
	Pre-EIA scoping activities (Gate 2+)	£196,132		Development of scheme understanding to support EIA scoping for Teddington as notified to RAPID
Data collection, sampling and pilot trials	**Sub-Total**	**£1,721,602**	**30%**	
	Water quality sampling	£860,801		Water quality sampling relating to 4 schemes covering the fluvial Thames, Tideway, River Lee and reservoirs. Methods and determinands agreed with NAU and DWI
	Algae sampling and experiments	£103,296		Summer 2022 algae surveys and lab experiments to provide evidence for INNS assessments
	Fisheries surveys	£292,672		Fisheries surveys in Thames, Lee and reservoirs which including smelt investigations and eDNA. Methods agreed with NAU
	Other aquatic surveys	£206,592		Invert, macrophytes, benthic surveys for the SRO. Methods agreed with NAU
	Terrestrial ecology surveys	£258,240		Ecology surveys and reports for key infrastructure sites across the 4 schemes
Procurement	**Sub-Total**	**£202,622**	**4%**	Strategic review of procurement routes, client governance, external advisory services and steering group on commercial matters
Planning	**Sub-Total**	**£279,140**	**5%**	Development of strategic planning, land access and engagement strategy. Support with planning engagement with local authorities
Stakeholder engagement	**Sub-Total**	**£163,634**	**3%**	Customer research and preference studies for the SRO, including customer engagement on changes to source water supply.
Legal	**Sub-Total**	**£68,378**	**1%**	Legal advice on various issues and policies including review of documentation for Gate 2
Other: Gate3 preparation works	**Sub-Total**	**£11,580**	**<1%**	Preparation of technical specifications for Gate 3 procurement
Total		£5,708,645	100%	

3.11. In-line with the requirements set-out by RAPID any WBS exceeding spend of £0.5m has been broken down further in table 3.2 with a further explanation provided below

Cost breakdown

Project and Programme Management WBS

3.12. The WBS captures the costs for the SRO project delivery team consisting of a programme manager, project accountant, senior Thames Water managers, and technical advisors to provide both a strategic and tactical oversight of all work packages and deliverables.

3.13. The programme manager has been responsible for the management of all work packages to ensure the overall Gate 2 requirements were delivered to time and to budget. Furthermore, the role of the programme manager for Gate 2 has included additional input (compared to for example standard capital delivery project management) via leading stakeholder engagement activities, providing technical overview, authoring key components of the Gate 2 submission and undertaking a key governance and assurance role.

3.14. A robust change control process was established to ensure that any changes in scope were justified and agreed in advance of any additional expenditure being incurred.

3.15. The following processes were established to monitor and control Gate 2 progress.

- The project team met monthly for a Programme Management Board (PMB) meeting to review project progress, programme, cost control and make decisions on the progression of work scope.
- Technical oversight was undertaken through Technical Working Group meetings held weekly with consultants and monthly with Thames Water with any critical decision making escalated to PMB for approval.
- Commercial oversight was undertaken through monthly meetings with Thames Water Cost Manager with outputs escalated to PMB.
- Consultant commercial and programme meetings were held through 2021/22 on a weekly basis to monitor progress with exceptions and change escalated through to PMB

3.16. In addition, this WBS also includes the costs associated with technical and external assurance of our Gate 2 submission.

Feasibility assessment and concept design WBS

3.17. The feasibility assessment and concept design WBS captures all engineering activities associated with undertaking the feasibility assessment and development of the concept design for four schemes with multiple sub-options through Gate 2. This includes for:

- Engineering consultant to update configuration/sub-option solution designs.
- Development of scheme design principles and design vision.
- Costing and estimating schemes supported by benchmarking evidence.
- Development of the construction and operational philosophy for schemes.
- Development of drinking water safety plans.

- Development of scheme delivery programmes.
- The evaluation of construction sites and conveyance corridors
- Analysis of scheme carbon values
- Implementation of a GIS database for G2 deliverables

3.18. The outputs of these activities are captured within our Gate 2 report and Annex A and C.

Environmental Assessment WBS

3.19. This WBS consists of two key components; the work led by our environmental consultants in the assessment of impacts and reporting at Gate 2; and, the support and challenge provided by the NAU, EA and NE.

3.20. Internal costs within this WBS include for:

- Technical engagement with key stakeholders to share assessments and address challenges.
- Environmental modelling mainly focussed on aquatic modelling for the River Thames and Thames Tideway.
- Environmental assessments to support the Initial Environmental Appraisal including consideration of in-combination effects and identification of environmental risks that need mitigating through the design.
- Updated regulatory assessments to include Habitats Regulation Assessment and Water Framework Assessments.
- Initial environmental, social and economic valuations (or metric benefits) consistent with principles in the National Planning Statement and Water Resources Planning Guidelines.
- Pre-EIA scoping activities progressed as part of Gate 2+ in agreement with RAPID.

3.21. The outputs of these activities are captured in our Gate 2 submission and within Annex B

3.22. It was agreed through the ACWG a funding proposal for the NAU through Gate 2 with costs allocated per Water Company and then per SRO. For this SRO a fixed funding amount of £279,262 was agreed (based on quotes deflated to 2017/18). Additional costs for specialist area staff within the EA and NE input are in addition to the NAU fixed cost.

Data collection, sampling and pilot trials WBS

3.23. This WBS consists of costs for all field work activities undertaken through Gate 2. This involved both aquatic and land-based environmental surveys and was undertaken following established methodologies and in consultation with the NAU, EA, NE and in the case of the water quality sampling in consultation with the Drinking Water Inspectorate (DWI).

3.24. The results of these activities are captured in the environmental evidence reports used to information our regulatory assessments, Annex B2.

Cost benchmarking

3.25. Our procurement approach described in section 2 of this annex allowed benchmarking of costs between consultants for a detailed scope of works prepared by the project team.

3.26. In addition to this, we undertook an exercise to compare similar elements of work across Thames Water SROs to generate an understanding of the range of costs incurred for similar activities. In general, where the work scope was comparable costs where within 10% of other SROs.

Assurance of Gate 2 expenditure

3.27. This annex has been subject to assurance against the criteria provided by RAPID for efficient expenditure, namely that activities should be relevant, timely, complete and of high quality, and that this should be backed by benchmarking and assurance.

3.28. The findings from this external assurance are:

'*The scope, detail and quality of the 'Efficiency of Gate 2 Expenditure' annex meets the objectives of RAPIDs submission template in that the costs incurred are broken-down per activity and are appropriately evidenced as being benchmarked'*

4. Gate 3 forecast

4.1. As set-out in annex F we recommend for Gate 3 that the SRO is split into three separate SROs representing each scheme we propose progressing into Gate 3. Each scheme would continue to be progressed and promoted only by Thames Water as through Gate 1 and Gate 2.

4.2. We have provided an indicative list of activities, and timeline accordingly in annex F (scheme delivery plan) for Gate 3. Table 4.1, 4.2 and 4.3 below provide a budgetary estimate per SRO for Gate 3 work which cumulatively does not exceed the Final Determination allowance for schemes under the SRO.

4.3. In summary we recommend:

- Mogden South Sewer scheme be removed from the RAPID gated process at Gate 2 for the reasons outlined in annex F. This scheme maybe developed as part of a joint 'business as usual' activity by Thames Water teams at a future date. We estimate that the removal of this scheme from the RAPID process allows approximately £1m to be returned to the customer from the Gate 3 budget allowance.
- Teddington DRA SRO is progressed with full scheme design, planning, consultation and procurement activities to meet the requirements of the draft SE regional plan to provide water in 2031. We propose Gate 3 submission in Q4 2023 which would represent a mid-point through pre-application planning process. The forecast expenditure through Gate 3 is estimated as £14.4m (table 4.1)
- We recommend Beckton and Mogden water recycling SROs progress through to a mid-Gate 3 checkpoint with key activities focussing on scheme investigations, scheme refinement, closing gaps, and consulting on scheme options and closing out environmental investigations. We propose a mid-Gate 3 checkpoint mid 2024

where a decision can be made on future scheme progression based on the final WRMP24 and final SE regional plan. The forecast expenditure through to this checkpoint for Beckton and Mogden is estimated as £1.5m and 1.3m respectively (table 4.2 and 4.3).

Table 4.1: Estimated expenditure for Gate 3 for Teddington Direct River Abstraction SRO

WBS	Total WBS cost estimate (17/18 cost base)
Programme and Project Management	£1,301,694
Feasibility assessment and concept design	£1,659,795
Options benefit development and appraisal	£239,643
Environmental assessment	£2,016,175
Data collection, sampling and pilot trials	£5,859,023
Procurement strategy	£755,164
Planning strategy	£1,123,279
Stakeholder engagement	£1,021,678
Legal	£403,588
Other	£27,306
Total	£14,407,344

Table 4.2: Estimated expenditure for Gate 3 for Beckton Water Recycling SRO

WBS	Total WBS cost estimate (17/18 cost base)
Programme and Project Management	£174,684
Feasibility assessment and concept design	£208,737
Options benefit development and appraisal	£37,533
Environmental assessment	£302,033
Data collection, sampling and pilot trials	£368,662
Procurement strategy	£120,916
Planning strategy	£73,981
Stakeholder engagement	£131,751
Legal	£59,289
Other	£0
Total	£1,477,586

Table 4.3: Estimated expenditure for Gate 3 for Mogden Water Recycling SRO

WBS	Total WBS cost estimate (17/18 cost base)
Programme and Project Management	£174,684
Feasibility assessment and concept design	£208,737
Options benefit development and appraisal	£37,533
Environmental assessment	£302,033
Data collection, sampling and pilot trials	£186,622
Procurement strategy	£120,916
Planning strategy	£73,981
Stakeholder engagement	£131,751
Legal	£59,289
Other	£0
Total	£1,295,546

4.4. The total budgetary split between new SROs equates to £17.2m against a Final Determination for the SRO at Gate 3 of £22m.

4.5. We request the remaining allowance and underspend from Gate 1 and Gate 2 is all carried forward as at least one scheme is selected as a preferred scheme early within AMP9 and until WRMP24 and the regional plan is finalised.

4.6. We do not propose a change to the assessment criteria or penalty scale as implemented through Gate 1 or Gate 2. The assessment criteria (robustness, consistency and uncertainty) would be used to assess whether the submission meets expectations, falls short of expectation or is unacceptable.

Gate 3 forecast assumptions and exclusions

4.7. Our forecasts include a number of key high-level assumptions including:

- A Thames Water portfolio team to implement Gate 3 requirements across all the Thames Water SROs including for functional leadership, integrated programme controls and consistency.
- Forecasts are based on the activities and timings that deliver on the outputs of the draft SE regional plan and Thames Water's draft WRMP24. Any changes to model outputs or plans will change the Gate 3 activities and forecasts.
- Forecasts are time and output bound and assume Gate 3 for Teddington DRA is Q4 2023 and mid-Gate 3 checkpoints for Mogden and Beckton water recycling schemes are during Q2 2024.
- Forecasts are generated in the absence of formal quotes and are based on experience of progressing schemes through planning and undertaking further design refinement with the knowledge of Gate 1 and Gate 2 expenditure.

- Forecasts assume issues and concerns arising from stakeholders can be addressed and mitigated within the current programme and list of activities.
- The pre-application planning process for Teddington DRA SRO, will be a continuous process over approximately 18 months prior to planning application in Q2 2024. There will be a continual process of design and environmental refinement influenced by stakeholders and significant site investigations that spans RAPID gates. Therefore, our forecast includes a number of activities that will start in Gate 3 and run into Gate 4 and possibly beyond. The forecasts presented therefore do not necessarily encompass complete activities, just the forecast to commence work through Gate 3 (Q4 2022 to Q4 2023). Further spend will be required in Gate 4 to continue these activities.
- The Teddington DRA scheme encompasses three key components; a tertiary treatment plant at Mogden STW; a conveyance from Mogden to a discharge in the River Thames at Teddington; and, the abstraction of water upstream and discharge into the existing Thames Lee Tunnel (TLT). The Gate 3 cost estimates do not include the planning and procurement elements of an extension of the TLT from Lockwood to King George V reservoir as the need and benefits of this have not been established at this stage.
- It is assumed a number of SRO services/processes will be implemented across all Thames Water SROs from Gate 2, for example digital / BIM services and a PMO team, therefore negating the need for each SRO to capture dedicated services. Forecasts for Gate 3 assume cost sharing.
- It is assumed that a pilot recycling scheme is not required for Teddington DRA and costs have not been included for this.
- Costed risk has been included in estimates based on the risks identified within our Gate 2 submission and then proportioned to the relevant WBS.

4.8. Key exclusions to our forecasts at Gate 3 include:

- Land and property costs.
- Detailed planning and site investigation on the TLT extension.
- Legal or landowner fees required to permit access or undertake intrusive works on private land or commercial sites.
- Separate planning permission costs for intrusive works (i.e. planning permission costs for ground investigations work)
- External stakeholder costs other than those agreed with RAPID for NAU, EA NE and reasonable costs for Planning Performance Agreements with local planning authorities.
- Corporate communications and public relations work.
- Business as usual activities and work to support WRMP24.


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