UUW62

Water (Markets) Enhancement Case

October 2023

Chapter 8 supplementary document

This document sets out the service enhancement expenditure and activity that we will undertake, through our 2025-2030 business plan.

This case includes:

- Case 9: Water Trading
- Case 10: HARP DPC management costs

United Utilities

Water for the North West

1. Water (Markets) Enhancements

1.1 Structure

1.1.1 This contains our Water (Markets) enhancement cases and is structured as:

- Case 9: Water Trading
- Case 10: HARP DPC management costs

UUW62

Water Trading

October 2023

Enhancement Case 9

United Utilities

Water for the North West

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1. Enhancement submission

<table>
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<tr><td>Title:</td><td>Water Trading</td></tr>
<tr><td>Price Control:</td><td>Water</td></tr>
<tr><td>Enhancement headline:</td><td>Continued progression of the North West Transfer (NWT) and Severn to Thames Transfer (STT) Strategic Resource Options (SROs) through the RAPID gated process. Delivery of water trading enabling works, in alignment with the requirements of regional plans and company WRMPs.</td></tr>
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</td></tr>
<tr><td>This case aligns to :</td><td>• Water Resources West (WRW) and Water Resources South East (WRSE) Regional Plans
• United Utilities Water, Severn Trent Water and Thames Water rdWRMPs
RAPID SRO Gated Process

For full reconciliation between enhancement costs and data table lines, see enhancement mapping tabs in UUW117 – Project allocations CW3 and CWW3</td></tr>
<tr><td>PCD</td><td>Not applicable</td></tr>
</table>

2. Enhancement case summary

Gate	Summary	Location reference
Need for enhancement investment	• **Water Trading** - Enabling works to facilitate trade with Severn Trent Water (SVT) from 2030, in alignment with Water Resources West (WRW) Regional Plan and UU / SVT rdWRMPs. • **RAPID Gated Process** - Progression of STT and NWT SROs through the RAPID gated process during AMP8 to allow shift to adaptive pathways with increased trading if required.	*3.1* *3.1.1*
Best option for customers	• **Option selection process** - A sophisticated, industry-leading best value approach to select options for water trading and help ensure that customers and the environment are fully protected. • **Customer preferences** – Research for both the UU WRMP and NWT SRO Gate 2 indicate a majority of customers surveyed are supportive of water trading. The best value metrics used to select options were weighted according to customer preferences derived from innovative research. • **UU Water Trading Principles** – Five key principles have been developed which need to be achieved by water trades in order to protect the interests of our stakeholders and the environment. • **Regulatory Oversight** – The water trading options have been developed through both the WRMP and RAPID regulatory processes. Ofwat will have oversight of commercial arrangements (e.g. Bulk Supply Agreements) and environmental regulators will be responsible for new or amended abstraction licences. • **DPC Assessment** – All water trading enabling works have been assessed for suitability against Direct Procurement criteria, both at an individual option level and as potential aggregated batches of work. For the 25 Ml/d Severn Trent trade the current options are not considered suitable for DPC delivery.	*5.1* *5.2* *5.3* *5.4* 5.5
Cost efficiency	• **Cost methodology (Capex)** - Cost estimates for the water trading enabling works have been produced using UU's estimating database. The cost models are based on a detailed analysis of tender returns and have been benchmarked internally against relevant recent projects at UU. • **External Benchmarking** - The cost estimates for the NWT SRO have been validated using best practice benchmarking methodologies adopted from the Royal Institute of Chartered Surveyors and Infrastructure Projects Authority. • **RAPID Cost Efficiency Assessment** – the STT and NWT SROs have been assessed as efficient at both Gates 1 and 2 by RAPID.	*6.1* *6.2* 6.3
Customer protection	• We have not included a PCD for this area as there is sufficient customer protection in place through the RAPID gateway process.	*7.2*

3. Introduction

3.1.1 Through our leading role in Water Resources West (WRW) and regional planning, we are actively helping to solve some of the largest water supply risks in the country. In particular, we sponsor the North West Transfer (NWT) and Severn to Thames Transfer (STT) Strategic Resource Options (SROs), the latter in collaboration with Severn Trent Water and Thames Water. These projects are currently being progressed through a gated assessment process managed by the Regulators' Alliance for Progressing Infrastructure Development (RAPID) to address regional and national water resources planning needs.

3.1.2 This enhancement case is seeking funding to progress the SROs to achieve the requirements of regional and company water resource plans.

3.1.3 The STT scheme involves transferring water from the River Severn to the River Thames where it can be abstracted by a number of water companies in the Water Resources South East (WRSE) region. When there is insufficient natural flow in the River Severn to meet the abstraction requirements of the South East, support releases can be introduced to augment flows, including from the United Utilities operating region via the NWT SRO.

3.1.4 The NWT SRO has the potential to transfer up to 180 Ml/d of raw water from Lake Vyrnwy into the River Severn. In order to mitigate the impact on customers and the environment, the NWT SRO involves developing new water sources in North West England to 'backfill' the volume traded, in addition to engineering modifications to the Vyrnwy Aqueduct system to maintain supply resilience. Support from the NWT SRO would only be required at times when water resources in the Midlands and South East are under stress.

3.1.5 At PR19 Final Determination, it was anticipated that SROs would complete the gated process within AMP7 and the funding was accordingly time bound. However, it has become evident that due to the time and seasonal constraints regarding collection of environmental data, along with extensive planning and abstraction licence timeframes, the SRO development process for the STT and NWT SROs will now continue into AMP8. RAPID have confirmed that PR19 funding will be reconciled at the end of AMP7 and any additional funding required during AMP8 to complete the gated process will be funded through PR24.

3.1.6 To progress the NWT SRO through the gated process we have allowed for the delivery of Gate 4 activities and capital investment associated with development of source options and Vyrnwy system modifications to achieve a 25 Ml/d raw water transfer to Severn Trent by 2030 in accordance with WRMP preferred plans. This is subject to change dependent upon the final WRMPs being approved by DEFRA.

3.1.7 It is assumed that initial capital investment to facilitate transfers will be funded by customers of United Utilities and recovered from trading counterparties in the long term through Bulk Supply Agreements. There is no contribution from base funding as the investment is purely for the purposes of facilitating water transfers.

3.1.8 To accommodate the risk of WRSE adaptive pathways being triggered within AMP8 we have also included a nominal sum to maintain the project in readiness for ramping up if required.

3.1.9 With respect to the STT SRO we have assumed we would continue to develop the project with the other two partner companies providing supporting activities including WRMP29 inputs, addressing STT queries, any outstanding 'proof of concept' activities and early re-start planning activities if required. The allowance is based on an 80/10/10 split between TW/UU/ST as proposed in the RAPID Gate 2 submission.

3.1.10 If SESRO could not be delivered and STT was then required to be commissioned by 2039/40 we have assumed the mobilisation of Gate 3 STT interconnector, bypass and system activities would be 100% funded by Thames Water via the re-allocation of Thames Water's SRO portfolio funding. This includes the delivery of the Vyrnwy Bypass which UU may be best placed to lead the delivery. In this scenario

additional UU funding would also be required to ramp up the NWT SRO in AMP8 beyond what is included in this enhancement case. We have assumed that a water resources PR29 reconciliation mechanism will be used to recover an in period investment of this nature.

3.1.11 Finally, although we have proactively engaged with Northumbrian Water in AMP7 regarding the joint promotion of a new Kielder Water SRO, we have been unable to reach an agreed way forward. We have therefore not included any costs associated with development of new SRO projects in AMP8.

3.1.12 The breakdown of funding requested for AMP8 is outlined in Table 1 below;

Table 1: AMP8 Funding Requirement

		AMP8 Capex (£m)				
	Scheme	**FY 2026**	**FY 2027**	**FY 2028**	**FY 2029**	**FY 2030**
WRMP Preferred Pathway	NWT SRO Progression	4.42	5.55	0.00	0.00	0.00
	*WR111 - Woodford Borehole - £18.82m	0.00	1.53	7.66	6.13	4.39
	*WR107a2 - Aughton Park Borehole - £21.98m	0.00	1.79	8.96	7.17	5.13
	*WR113 - Tytherington Borehole - £8.95m	0.00	0.73	3.65	2.92	2.09
	*STT A4 – Vyrnwy Enabling Works (25 Ml/d trade)	0.46	1.84	2.76	2.76	1.38
WRMP Adaptive Pathway	STT SRO Progression	0.25	0.25	0.25	0.25	0.25
	NWT SRO Progression	0.83	0.83	0.83	0.83	0.83
	CAPEX	£76.72				

**Denotes options which are being proposed at this stage to enable delivery of the Preferred Pathway, however these are subject to further feasibility assessment during the RAPID gated process and are therefore subject to change.*

3.1.13 It is anticipated that the new sources will be operational from Financial Year 2030-31 and therefore Opex will be incurred in AMP9. This will be absorbed into our base costs and recovered through Bulk Supply Agreements with trading partners.

3.1.14 Our approach to delivering best value is robust and consistent across all of our enhancement cases. Our approach uses a rich mix of metrics to help us drive value and efficiency in developing our business plan. Consistency of the approach is driven through our PR24 Value Tool which allows us to quantify and value environmental and social benefits, costs and risks. For more detail on this approach please see supplementary document *UUW45 – Our approach to deliver best value totex*.

4. Need for enhancement investment

4.1 Strategic Case for Water Trading

4.1.1 The SRO programme was developed in response to a number of strategic reviews of water resources. The Water Resources Long-term Planning Framework 2016, set out by Water UK, highlighted the "significant and growing risk of severe drought impacts arising from climate change, population growth and environmental drivers" in England. The report recommended that a portfolio of strategic supply side resources and transfers were required by 2065.

4.1.2 This work was developed by the National Infrastructure Commission (NIC) and reported in its publication "Preparing for a drier future England's water infrastructure needs" 2018. This report includes an action to "improve infrastructure through a national transfer network in England and new infrastructure, such as reservoirs and water re-use systems".

4.1.3 In 2020 the EA published its findings with the report "Meeting our future needs: a national framework for water resources". This report delved deeper into the regional supply demand balance and noted in particular that the Water Resources West (WRW) and Water Resources North (WReN) "should explore the potential for transfers to neighbouring regions" as part of the national agenda on water resilience.

4.1.4 The NWT and STT SROs are being developed to ensure that a reliable and resilient water supply is provided to water stressed areas, including the Midlands and the South East of England. The projects also take a step towards the national transfer network first noted in the NIC report in 2018 by transferring water from an area of surplus to areas of deficit.

4.2 Water Resource Plans

4.2.1 Regional water resource planning is currently indicating that there are three potential trading scenarios from the United Utilities operating region.

4.2.2 Firstly, Severn Trent have selected the NWT SRO to provide a 25 Ml/d raw water transfer from 2030. This is included in both the UU and SVT rdWRMP preferred plans.

4.2.3 Secondly, WRSE have selected STT and NWT SROs in two adaptive pathways. The first adaptive pathway addresses the risk associated with the SESRO SRO (Abingdon Reservoir) being discontinued through failure to achieve a Development Consent Order (DCO). This would lead to a requirement of 180 Ml/d NWT support from 2040. The second adaptive pathway addresses the risk of the WRSE region not achieving a Per Capita Consumption (PCC) target of 110 litres/day. This would lead to a requirement for 140 Ml/d NWT support from 2050.

4.2.4 Although the STT and NWT SROs are not in the South East preferred plan, WRSE have stated that ‘Although the water companies are working toward mitigating those risks *(no SESRO or PCC target not achieved)* through their plans, they are influenced by factors outside of the control of the companies and therefore have a reasonable likelihood of occurring. The adaptive pathways recognise different potential outcomes. In either case, there is a need to progress development of the STT system in the next 5 years so it can be delivered by 2039 if required’.

4.2.5 Accordingly, WRW, Severn Trent Water, Thames Water and UU are proposing to progress the STT SRO and supporting SROs (including NWT SRO) during AMP8 so they are ‘on standby’ should an adaptive pathway be triggered.

4.2.6 To accommodate the different pathway scenarios the UU rdWRMP has also identified preferred source options to achieve the respective trading requirements. These are illustrated in Table 2 below.

Table 2: Source Options for Preferred Plan and Adaptive Pathways

Option name	Capacity (Ml/d)	Revised draft Preferred Plan (25 Ml/d trade with SVT in 2030)	Revised draft WRSE Higher Demand (140 Ml/d trade with WRSE in 2050, 165 Ml/d total trade)	Revised draft WRSE No SESRO (180 Ml/d trade with WRSE in 2040)
GWE_AUGHTON PARK a2	10	2030	2030	2030
GWE_TYTHERINGTON	3	2030	2030	2030
GWE_WOODFORD	9	2030	2030	2030
SWN_RIVER BOLLIN	25		2050	2045
GWE_WIDNES	17		2050	2045
SWN_RIVER RIBBLE 49d	40		2060	2045
SWN_RIVER IRWELL	40		2060	2042
GWE_RANDLES BRIDGE	11			2050

Source *UU Revised Draft Water Resources Management Plan 2024*

5. Best option for customers

5.1 Option Selection

5.1.1 As detailed in our WRMP Draft Technical Report – Deciding on future options, we used a sophisticated, industry-leading approach to select options for water trading and help ensure that customers and the environment would be fully protected. A continuation of the water trading assessment approach used for our 2019 Water Resources Management Plan, the methodology incorporates the 'system simulation' and 'Robust Decision Making' techniques. In summary, it involves the following steps:

(a) Select a range of resilience and environment performance metrics, which represent the key features we need to protect.

(b) Use a water resources model to simulate the future performance of the system without water trading.

(c) Measure the drop in performance due to water trading without any supply options in place.

(d) Build sub-options into the model to recover the drop in performance, specifically optimised to minimise cost.

5.1.2 We created several candidate solutions and then calculated the best value scores using the decision-making framework developed with Water Resources West. The solution was initially developed to fulfil a 205 Ml/d trade, and then re-optimised to different trade volumes using our ValueStream tool.

5.2 Customer Preferences

Draft WRMP Consultation

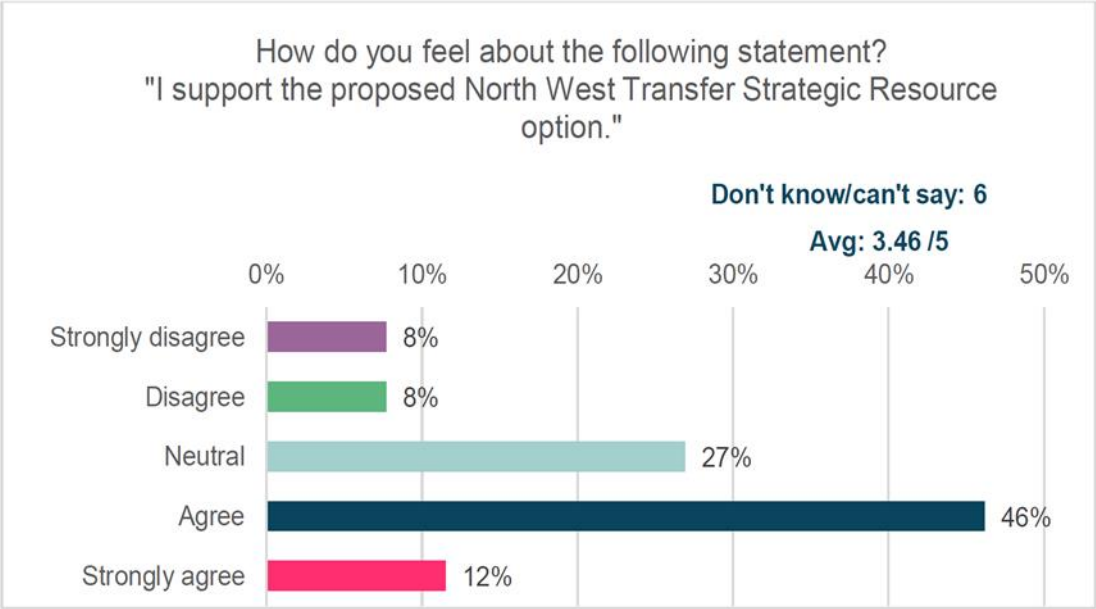
5.2.1 UUs draft WRMP 2024 has been developed through extensive engagement with stakeholders. A programme of research has built upon previous research and consultation exercises undertaken for our 2019 plan and previous plans, and is based on a combination of techniques including focus groups, telephone interviews, videos, discussions and surveys, involving representative cross-sections of customers.

5.2.2 Examples of relevant topics include;

- Immersive research to explore customer preferences for water resources initiatives, which may be included in our plans, including water efficiency promotion, leakage reduction, metering, water reuse, catchment management, increasing supply capacity and water trading;
- Specific project to assess customers' willingness to pay for an improvement in the level of service for temporary use bans;
- Research to inform the development of a water transfer scheme and enable such a scheme to be assessed and designed; and
- Research on customer preference of water to inform the choice of new options (e.g. groundwater and surface water).

5.2.3 Around 10% of our Draft WRMP consultation responses were linked to water transfers. We received a full spectrum of views on our proposals, ranging from fully supportive to unsupportive. On balance the feedback was positive. This was underlined by the response received from attendees at our consultation events when asked if they supported the proposed North West Transfer (NWT) Strategic Resource Option (SRO). As shown in Figure 1, 58% of attendees were supportive and 16% unsupportive.

Figure 1: Chart showing support for proposed North West Transfer Strategic Resource Option.



Source: UU Draft Water Resources Management Plan 2024 Statement of Response

5.2.4 Further customer and stakeholder engagement – at a more granular option level – will be undertaken during 2024 as part of the RAPID Gate 3 process.

RAPID Gate 2

5.2.5 With respect to water trading, as part of the RAPID Gate 2 there has been continued engagement with the wider stakeholder population regarding the development of the regional plans, the selection and prioritisation of solutions and the inter-regional reconciliation of plans. This has involved a wide spectrum of stakeholders including Local Authorities, Regulators, Environmental and Societal NGOs along with special interest groups and businesses.

5.2.6 We have continued to consult on water transfers via the medium of the regional plan and have undertaken two pieces of consultation to a wider audience. Overall there has been high support for transfers and most of the focus has been on the importance of protecting the environment in source areas along with realising opportunities for environmental net gain and economy boost from transfers.

- IdeaStream consultation - WRW have developed an online platform that allows stakeholders to engage in their own time. A consultation was undertaken via IdeaStream from November 2021 to January 2022 on the topic of water transfers. From the responses, we saw that there was broad acceptance of trading. Although this was the case, respondents wanted both themselves and the environment to be protected from any detrimental effects of transfers. For example, they felt that in areas that became transfer sources, there should be no reduction in drought resilience and there should be no detrimental effect on the environment.
- Respondents also felt that the cost of trading should be borne by those who consume the water. Of the transfer schemes discussed, there were few that disagreed with them, although the largest proportion of consultees were non-committal.
- The WRW Emerging Regional Plan consultation - The plan was published in January 2022 and following this, a regional stakeholder consultation exercise was launched to over 1000 stakeholders including around 200 from Wales. There was majority support for sharing
- water resources, with 75% agreeing with the proposal. However, there were also contrasting views that North West Transfer reflected regional concerns and differences: some delegates objected to their more water-rich regions losing out to development in the South, while others felt that ethically it was correct to share water resources. When asked to rank the benefits of water transfers,

enhancements to the environment was first, followed by improvements to water supply and resilience, and investment into the area.

5.3 UU Water Trading Principles

5.3.1 In order to participate in water trading, we have developed a number of principles to be achieved in order to protect the interests of our stakeholders. This is to ensure there is no material detriment to customers in the North West across a range of criteria including water quality, environment, supply resilience and economic impact as a consequence of water trading.

Table 3: Water trading principles

Principle	Criteria
Drinking Water Quality	United Utilities Water customers will receive drinking water that is fully compliant with all regulatory standards.
Customer Acceptability	Customers must continue to have confidence in their water supply and acceptance in terms of taste, odour, appearance (discolouration) and pressure
Resilience	The transfer must not have a net detrimental impact – and should ideally improve – the resilience of the water resource and assets used to provide services to customers.
Environment	The projects must not have a significant adverse effect on the environment, must be approved through regulatory oversight and must support, or at least not have a detrimental impact on, the company's overall environmental performance.
Customer Bills	The scheme, should provide demonstrable value for money for customers in the North West, as reflected in customer bills, and customers in the region must receive a fair proportion of the national benefits which arise from the scheme.

5.4 Regulatory Oversight

5.4.1 There will be extensive regulatory oversight associated with delivery of water trading enabling works and progression of the STT and NWT SROs.

5.4.2 Delivery of the preferred plan will form part of the annual WRMP review process, while the progression of the SROs will continue to be managed through the RAPID gated process.

5.4.3 There will also be oversight from Ofwat for any new bulk supply agreements developed with trading partners, and the environmental regulators will govern the processes associated with awarding or varying permits and licenses to enable trading.

5.5 DPC Assessment

5.5.1 In partnership with independent consultants, during RAPID Gate 2 we assessed the scheme's suitability for Direct Procurement for Customers (DPC) and outlined a preferred procurement strategy. UU are pioneers in application of the DPC approach through the Haweswater Aqueduct Resilience Programme (HARP), and are familiar with the practicalities associated with this route. In line with RAPID guidance, DPC assessments were undertaken using the PR19 criteria developed by KPMG on behalf of Ofwat. These assessments will be reviewed against the updated DPC criteria issued in March 2023 during RAPID Gate 3.

5.5.2 With respect to the Sub-options required to support the 25 Ml/d trade with Severn Trent - GWE_AUGHTON PARK a2, GWE_TYTHERINGTON and GWE_WOODFORD – all three were substantially below the financial threshold of £100m and therefore considered 'somewhat less suitable for DPC'.

5.5.3 We also undertook further assessment to establish whether discrete elements of scope within each Sub-option could be aggregated together to create a package of work which achieved the DPC criteria. This assessment determined that these aggregated elements not only fell below the project size threshold, but also that the package contained a large number of low value works, spread over a large geographic region, and potentially delivered over different timeframes. For these reasons, this package was not considered practical nor viable for DPC delivery.

5.5.4 The Vyrnwy Aqueduct Enabling Works have also been assessed as "somewhat less suitable for DPC" as the solution requires significant and frequent interactions with existing UU infrastructure which directly supplies customers and is required to maintain our statutory duties.

6. Cost efficiency

6.1 Costing Methodologies

Capex Costs

6.1.1 Estimates have been generated with UU's estimating tool to generate capital and operational expenditure figures per source option. The exercise aligns to the ACWG (All Company Working Group) Cost Consistency Methodology, Rev E.

6.1.2 Costs produced from the UU estimating tool relate to a formula associated with each cost element. The costs are driven by cost curves that have been developed for various common asset types. Each element of a solution is represented by a process block in a Process Block Diagram (PBD), for which key variables are defined by the designers. These parameters are then applied to the appropriate cost curve to develop a yardstick construction cost for that element. The PBDs summarise the designed solution and have been checked and reviewed by each discipline (process, civil, mechanical, and electrical) to build up the conceptual designs.

6.1.3 A series of automated equations generate indirect costs which are applied to the direct construction totals to generate a total project value. Where the required yardstick value was outside the database, the costing teams used a bottom-up approach to generate the costs. These indirect costs are based upon analyses of historical project data and cover the following Contractor Add-ons, Tender to Outturn Cost and Client Add-ons.

6.1.4 The estimates were defined by UU's Estimating Team as Level 2 estimates, meaning its typical purpose is screening, concept, or study. Under the Association for Advancement of Cost Engineering (AACE) International Cost Estimate Classification System, the estimates are classed as Class 4 estimates with approximately –15% to +50% accuracy range.

6.1.5 Cost estimates for the water trading enabling works were produced using UU's estimating database which was developed for PR19 and is being used currently for PR24. The cost models are based on a detailed analysis of tender returns up to financial year 2017/18, and have been benchmarked internally against relevant recent projects at UU.

6.2 Capex Benchmarking

6.2.1 The cost estimates for the NWT SRO were further validated using best practice benchmarking methodologies adopted from the Royal Institute of Chartered Surveyors and Infrastructure Projects Authority. The objectives of the exercise were to benchmark the cost estimates against the historical performance of peer companies to enhance the confidence in solution deliverability. The metrics are based upon benchmarking of key construction activities against historical project cost data, and allocation of normalised project uplifts covering main-contractor and client On-Costs and Overheads, Estimating Uncertainty, Tender-to-Out-Turn costs, Sites Specific Complexity and Constraint uplifts and Corporate Overheads to achieve a robust benchmark across the holistic cost stack.

6.2.2 The NWT estimate has been costed competitively, but is considered to be deliverable by comparison with industry benchmarks. The UU estimate is <10% below the median industry position, 27% above the industry lower position and 30% below industry benchmark higher position.

6.3 RAPID Cost Efficiency Assessment

6.3.1 The PR19 Final Determination specified that any SRO expenditure on activities outside the gate activities would be considered as inefficient and be returned to customers.

6.3.2 As part of gate assessment RAPID consider whether activity is efficient by considering the relevance, timeliness, completeness, and quality of the submission which should be supported by benchmarking and assurance.

6.3.3 Both the STT and NWT SROs have been assessed as efficient at Gates 1 and 2.

7. Customer protection

7.1 Introduction

7.1.1 It is important that customers have confidence that we will deliver the enhancement schemes that get reflected in our PR24 final determinations and they are suitably protected in the event of non-delivery, or if there are material changes to deliverables (including changes to dates), which leads to a change in cost (including changes in the timing of required expenditure). Ofwat proposes that, if companies fail to deliver or are late delivering improvements to customers, then price control deliverables (PCDs) should, where appropriate, be used to compensate customers. In our PR24 *Chapter 8 – Delivering at Efficient Cost, section 8.8.9* we have proposed an approach to PCDs that aims to provide customer protection, such that customers are fairly compensated for non-delivery (such as due to a change in regulatory requirements) or late delivery (including as a result of a change to a regulatory date), between PCDs, any related ODI underperformance payments, and cost sharing arrangements.

7.2 Water trading enhancement price control deliverable

7.2.1 We have not included a PCD for this area as there is sufficient customer protection in place through the RAPID gateway process.

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United Utilities

Water for the North West

UUW62

HARP DPC Management Costs

October 2023

Enhancement Case 10

United Utilities

Water for the North West

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1. Enhancement submission

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<tr><td>Title:</td><td>HARP DPC Management Costs</td></tr>
<tr><td>Price Control:</td><td>Water Network Plus</td></tr>
<tr><td>Enhancement headline:</td><td>At PR19 UUW identified a need to improve the resilience of the continuous supply of potable water delivered via the Haweswater Aqueduct (HA) to reduce the risk to water supplies for the long-term. This need will be delivered through Haweswater Aqueduct Resilience Programme (HARP) under Direct Procurement for Customers (DPC).

This enhancement case covers the next phase of activity, allowing UUW to deliver its obligations set out within the CAP Agreement and Allowed Revenue Direction (ARD), including management of the Competitively Appointed Provider (CAP) (who is responsible for the financing, design, build and maintenance of the replacement tunnel sections) and interaction with the Independent Technical Advisor (ITA).</td></tr>
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2. Enhancement case summary

Gate	Summary	Location reference
Need for enhancement investment	At PR19 UUW identified a need to improve the resilience of the continuous supply of potable water from the Haweswater Aqueduct (HA) to reduce the risk to water supplies for the long-term. This need will be delivered through Haweswater Aqueduct Resilience Programme (HARP) under Direct Procurement for Customers (DPC). This enhancement case covers the next phase of activity, managing the day-to-day interactions with the CAP and the ITA, monitoring the CAP's performance in line with the CAP Agreement, procure and interact with the Approved Assurer, fulfil our other core contractual obligations under the CAP Agreement, and provide light-touch assurance on CAP activities to reflect our ultimate accountability for this project.	*3.1.5* *4.3.3*
Best option for customers	The CAP Agreement, our contract with the CAP once appointed, sets out UUW's role as the Appointee on this project and serves as the source document for our obligations. The CAP Agreement has been developed under the process set out in Ofwat's PR19 briefing note and using Ofwat's PR19 DPC contract principles to ensure customers' interests are best protected. We have reviewed all of our obligations within the contract and this claim covers the costs of fulfilling these core obligations. In addition to our core obligations, UUW will adopt light-touch assurance on CAP activities to reflect our ultimate accountability for this project.	*4.3.1*
Cost efficiency	UUW has conducted a bottom-up assessment of people requirements to fulfil our obligations. The cost of these resources has been estimated using a set of internal rates, which have been benchmarked against similar roles in other sectors. This reflects the market rates that will be required to attract the right expertise to support the delivery of UUW's activities, whilst offering best value for money to customers. We engaged with an external advisory team to provide independent assurance against our proposed resource model. The advisory team suggested that larger client team than is currently proposed would be required. Since this review we have further assessed the resource requirements following a number of changes to UUW's obligations under the CAP Agreement (e.g. more information being provided for acceptance than approval and a streamlining of processes), which has helped to drive a more efficient team structure.	*6.1.1* *6.3.1*
Customer protection	There is no performance commitment benefit for the completion of this investment and, in line with the Ofwat's updated DPC guidance published in March 2023, we have not proposed a price control deliverable. We have developed a set of incentives within the CAP Agreement and ARD to ensure UUW fulfils its obligations as the Appointee. This includes: (a) collaborative incentive, which provides a financial incentive for UUW, the CAP and its contractors to work together to deliver the project on time and cost, and (b) the concept of UU Events, which provides a financial incentive for UUW to prevent or minimise specific compensation events that were foreseeable and within our direct control.	*7*

3. Introduction

3.1.1 This document sets out an enhancement case of £24.772m to allow UUW to manage the CAP and deliver its Appointee obligations in accordance with the CAP Agreement.

3.1.2 Under the Water Industry Act 1991, UUW has a duty to supply drinking water that is safe and of a quality acceptable to consumers.

3.1.3 The Haweswater Aqueduct (HA) is owned, operated and maintained by UUW and is used to transport and distribute potable water to 2.5 million people every day.

3.1.4 Around half of the length of the HA system is made up of pressurised multi-line siphons, which are inherently resilient to service interruption due to there being four siphons running in parallel. As they are made largely of steel and are near to the surface they lend themselves to effective repair in the event of maintenance works being required. The remainder of the aqueduct (52km) is provided via six open channel flow and single line siphon tunnels, made from a cast-in-situ reinforced concrete. They represent single points of system failure and are often deeply buried making them difficult to repair without a full system shutdown.

Figure 1: Haweswater Aqueduct Route

3.1.5 Planned investigations into the structural condition of the HA concluded that large sections of the potable aqueduct, namely the single line tunnel sections, were in poor asset health and approaching the end of their design life. This posed a risk of tunnel failure, with risk projections due to become intolerable in the 2030s. As a result, UUW has identified a need to improve the resilience of the continuous supply of potable water to reduce the risk to water supplies for the long-term. This need will be delivered through HARP under DPC.

3.1.6 As the Appointee of this DPC project, in AMP7 UUW delivered a set of preparatory activities for Ofwat's Control Points, including initial design, planning, ground investigations and the development of the CAP Agreement – our contract with the CAP once appointed. Our AMP7 programme also procured the CAP and will oversee CAP activities at the start of construction.

3.1.7 The CAP will be responsible for financing, designing and constructing replacement sections of the potable HA single line tunnel sections from north to south, as well as maintaining the newly constructed assets for a 25-year period. Full details of our overall business need can be found within the strategic case section of UUW's Outline Business Case submission issued to Ofwat in December 2021. Ofwat accepted our submission, designated the project as a DPC project and provided consent to commence procurement.

3.1.8 This enhancement case covers the next phase of activity as we moved into AMP8. Following Ofwat consent to award the contract, UUW will need to manage the CAP on an ongoing basis, and fulfil its client duties in monitoring the CAP's performance against its obligations and providing light-touch assurance on CAP activities to reflect our ultimate accountability for this project.

3.1.9 Our enhancement case costs are predominately made up of people costs along with a small allocation of other costs to cover, for example – the purchasing of telemetry outstations in line with our obligations under the CAP Agreement.

3.1.10 Based on UUW's preliminary delivery programme, which will be superseded by the successful bidder's programme, the total expected project cost for managing the CAP is £39.5m. This cost will be split across multiple AMPs of which £1.8m is forecast in AMP7, £24.772m in AMP8 and £12.9m in AMP9. This cost position is consistent with separate Ofwat discussions in preparation for our Full Business Case submission (which will be made in 2024).

3.1.11 AMP7 costs will be managed against the PR19 Final Determination with any variance being managed through the totex sharing mechanism. In line with paragraph 4.2.1, we have experienced delays to this point and are forecasting to overspend against our PR19 allowance, which is attributable to HARP being a pathfinder DPC project; further details on the reasons for our overspend can be found in paragraph 4.2.3. Our AMP8 costs form part of this enhancement case submission and do not relate to our forecasted overspend in AMP7. Our AMP8 costs are purely related to UUW's ongoing costs to manage the CAP. Any costs beyond AMP8 are to be managed through future price reviews.

3.1.12 The numbers above are based on current best knowledge on how UUW will set themselves up to manage the CAP. Once the successful CAP and ITA bidders have been selected, management structures and the CAP's construction programme will be confirmed. UUW will subsequently review and adjust its costs accordingly, and reflect this within the Full Business Case (FBC) submission. In line with recent Ofwat discussions, it has been noted that any updated value provided at FBC submission will be considered ahead of Final Determination.

4. Need for enhancement investment

4.1 Introduction

4.1.1 It has become clear, through a series of inspections, that there is significant risk of failure associated with the existing HA, which could lead to either an interruption to supply (catastrophic failure) or a water quality failure.

4.1.2 As the Appointee of this project, UUW will now need to manage the CAP in line with its obligations under the CAP Agreement

4.2 AMP7 Expenditure Requirements

4.2.1 Ofwat assumed that HARP-related activities would cost £57.4m within AMP7 (17/18 prices), which represented a £15.3m cost reduction from our PR19 submission of £72.7m. Our AMP7 programme was intended to cover preparatory activities, development of documentation for Ofwat's Control Points, the procurement of the CAP and management costs to oversee CAP activities at the start of the construction phase.

4.2.2 We have successfully progressed through a number of Ofwat's Control Points and are currently in the tender process for procuring a CAP to deliver this project under DPC. We have experienced delays to this point and are forecasting to overspend against our PR19 allowance.

4.2.3 This overspend is associated with HARP being a pathfinder DPC project. At PR19 it was difficult for UUW to fully foresee the activities and volume of work involved in getting a DPC project ready to tender and to run the procurement process, and the need for extensive external legal and financial advisor support. Aside from the inherent complexity of the CAP Agreement itself and the extensive collaboration with Ofwat in its development, new requirements have arisen that were not anticipated at PR19. This includes the development of contractual documentation and subsequent procurement of the ITA, development and agreement of the ARD, and the development of the incentive model related to compensation events, capital support payments and the procurement process. Furthermore, the process of developing the tender documentation for the procurement process has also taken longer than expected at PR19; this is partly as a result of being a pathfinder DPC project with no precedent for timescales, and partly as a result of the need to develop the detail of the DPC contractual and regulatory framework for the first time.

4.2.4 UUW has at all times worked towards successfully delivering the first DPC project to go out to procurement, even where this has driven additional cost or delayed delivery of the project. While there are some areas where UUW has been funded for activities that have not taken place due to the delay in the programme (e.g. contract management during the construction phase), these are significantly outweighed by overspends associated with meeting Ofwat's evolving expectations for DPC.

4.3 AMP8 Expenditure Requirements

4.3.1 The CAP Agreement, our contract with the CAP once appointed, sets out UUW's role as the Appointee on this project and serves as the source document for our obligations. The CAP Agreement has been developed under the process set out in Ofwat's PR19 briefing note and using Ofwat's PR19 DPC contract principles to ensure customers' interests are best protected. It has also been informed by working level discussions with Ofwat to ensure it aligns with Ofwat's vision for the DPC delivery model.

4.3.2 At Control Point D, Ofwat provided formal consent to the CAP Agreement – which has formed the basis of UUW's resource planning for managing the CAP. More recently we have been working closely with Ofwat to agree any proposed changes (as a result of bidder negotiations) that constitute material changes in risk allocation.

4.3.3 Our AMP8 expenditure will be used to manage the day-to-day interactions with the CAP and the ITA, monitor the CAP's performance in line with the CAP Agreement, procure and interact with the Approved Assurer, fulfil our other contractual obligations under the CAP Agreement and ARD, and to provide light-touch assurance on CAP activities to reflect our ultimate accountability for this project. As the Appointee, we will also monitor project benefits, oversee reputational risks, and take appropriate action to reduce the likelihood of overspends and delays to delivery.

4.3.4 Our day-to-day interactions with the CAP and ITA will include responding to general communications and queries through our contract management system, reviewing submissions and reports provided by the CAP and ITA, and attendance of monthly meetings (including construction progress, design coordination and review, risk planning and review, and customer, third party and the environment meetings) and the quarterly liaison committee meeting.

4.3.5 UUW will monitor the CAP's performance through a set of agreed key performance indicators (KPIs) set out within the contract. These have been specifically designed for a DPC model and sit alongside other incentives already embedded within the CAP Agreement. For example, the CAP is incentivised to deliver on time and to cost separately as the CAP Agreement utilises target cost principles and the CAP does not start to recover revenue until it has completed a tunnel section and customers are benefitting from the new asset.

4.3.6 These KPIs are also designed to reinforce the appropriate behaviours we expect the CAP to adopt and adhere to. For example, a KPI has been developed to reinforce appropriate CAP customer service behaviours throughout the construction period. Our role will be to monitor the CAP's customer service performance, including its ability to effectively address customer complaints in a timely manner, by undertaking a set of customer surveys each month. The output of these surveys will inform an average customer satisfaction score, which will be used to determine whether a financial penalty is incurred by the CAP at the end of each contract year. Any penalty incurred by the CAP will be passed through to customers.

4.3.7 UUW will also undertake ad-hoc audits to ensure the CAP remains compliant with its obligations under CAP Agreement.

4.3.8 Ahead of the first tunnel section being completed, UUW will procure an Approved Assurer – who will be responsible for assuring changes to the CAP's financial model under processes specified in the CAP Agreement, and revenue statements provided by UUW which will determine the CAP Charges to be recovered from customers on an annual basis (in line with the ARD).

4.3.9 UUW will be required to fulfil a range of other obligations under the CAP Agreement. These are not standard costs incurred under base expenditure and will not be recovered directly from the CAP. We have therefore accounted for these costs within this enhancement case. This obligations include:

(a) Issuing instructions to change the scope of the work and/ or services (with appropriate Ofwat engagement when Ofwat's consent is required under the ARD)

(b) Stakeholder management of key political and regulatory stakeholders

(c) Providing access to UUW assets

(d) Issuing instructions to the CAP to stop or not start works

(e) Support the CAP on legal claims, including the management of sensitive claims

(f) Support the CAP on land purchase and access activities, including approval of high value compensation claims and management of the warrant of entry process

(g) Assessment of monthly ITA payment applications prior to CAP payment

(h) Payment of the monthly unitary charge and one-off end of concession payment

(i) Assessment of capital support payment applications

(j) Management of the ITA contract

4.3.10 There are a couple of activities that will be delivered by UUW on behalf of the CAP – these are clearly defined within the contract and will be directly funded by the CAP on a fixed price basis; these costs have *not* been accounted for within this enhancement case. These costs and revenues will be recorded against the price control with any variations managed through totex sharing mechanism, which incentivises UUW to deliver these activities efficiently. These activities are:

(a) Supporting the CAP during an outage

(b) Delivery of the biodiversity net gain programme.

4.3.11 Figure 2 sets out some high level responsibilities of all DPC parties in key areas, including UUW's role.

Figure 2: High level responsibilities of DPC parties in key areas

Programme

UU responsibilities
- Accept/ not accept the monthly Interface Summary
- Instruct the CAP to stop or not to start any given works
- Request the CAP to submit a revised programme for acceptance (if UU believes that actual progress has significantly fallen behind/ concerns have been raised on the Interface Summary)

CAP responsibilities
- Develop monthly revised programme in accordance with CAP Agreement requirements, including an Interface Summary
- Submission of a monthly revised programme

ITA responsibilities
- Assess and accept/ not accept monthly revised programme submitted
- Request the CAP to submit a revised programme for acceptance (if the ITA identifies concerns within the wider programme)

Compensation Events

UU responsibilities
- Challenge a Compensation Event when appropriate
- Provide direction to the ITA on which solution will be adopted if the CAP provides one or more quotation

CAP responsibilities
- Raise early warnings to UU and the ITA
- Notify UU and the ITA of a Project Compensation Event
- Provide a Project Compensation Event quotation to the ITA

ITA responsibilities
- Determine the validity and classification of a Project Compensation event
- Request, assess and accept/ not accept Compensation Event quotation
- Undertake its own assessment of a Project Compensation Event
- Implement a Project Compensation Event

Detailed Design

UU responsibilities
- Attend monthly design coordination meetings
- Review and respond to reviewable design data submissions

CAP responsibilities
- Develop and finalise the design and specification of the works in accordance with the CAP Agreement
- Submit reviewable design data to UU for review
- Arrange and attend monthly design coordination meetings
- Obtain approval of reviewable design data from third parties (e.g. Local Authorities, National Highways, EA)

Quality Assurance

UU responsibilities
- Review and respond to quality plan submissions
- Review of quarterly CAP quality reports

CAP responsibilities
- Prepare and maintain appropriate quality plans in accordance with the CAP Agreement
- Submit quality plans to UU for review
- Provide a quality management system
- Submission of quarterly reports on compliance with the CAP's quality management system and records (e.g. water tightness testing, segment, gasket and ring build records, and pipe jointing and welding records)

Source: UUW internal summary of information.

4.3.12 UUW will adopt a light-touch assurance approach to reflect the role of other parties under DPC. The CAP is accountable for managing its main contractors/ sub-contractors and providing assurance that the end product meets UUW's contractual requirements. The ITA will provide an independent assessment on cost, programme and compensation events to protect customers' interests. We do not believe that a full set of additional UUW assurance activities (over and above the CAP and ITA responsibilities) provides best value for customers.

4.3.13 That said, there are specific areas where UUW will want to provide a light-touch assurance, particularly those that have high consequence if errors or non-compliance are retrospectively identified. For example, we will provide a degree of assurance on the construction of the tunnel itself, including on-site observations on specific tunnelling aspects, including the manufacture and storage of tunnel rings. We will also review the CAP's quality records, including segment alignment, ring build records and advancement rates. We believe this approach is justifiable given the operational impact on customers as a result of downtime needed to resolve once the asset is live. The design life of the asset will exceed our contract with the CAP and any issues identified retrospectively will be difficult and expensive to rectify. Further details on our assurance approach is located within section 4 of this enhancement case.

4.3.14 As the Appointee on this project, we are ultimately responsible for delivering this DPC project. We will therefore monitor benefits, manage UUW owned risks, and take appropriate mitigating actions by

working collaboratively with the CAP and its contractors, and the ITA (as appropriate) to reduce the likelihood of overspends and delays to delivery.

4.3.15 The successful delivery of benefits are intrinsically linked to the CAP's construction programme, specifically the completion of operational readiness milestones for each of the tunnel section. The ITA has the responsibility to assess, challenge and accept the CAP's monthly construction programme. The ITA will issue a report detailing its findings to UUW, which we will review on a regular basis and raise any concerns where appropriate.

4.3.16 UUW will have the increased confidence to claim the associated benefit due to our light assurance activities on the build quality of the tunnel itself (as described above). Furthermore, there are a set of prescribed testing and end product assurance activities set out within the contract. Prior to operational readiness, the CAP must undertake a 28 day sampling and testing period to evidence (to the ITA and UUW) that the newly constructed tunnel sections do not adversely affect the potable water quality. Once both UUW and ITA are satisfied with the testing results, the ITA will issue a certificate of operational readiness and UUW will accept handback of the section. At this point, a newly constructed tunnel section will be transporting potable water to customers, allowing UUW to claim the associated benefit.

4.3.17 Our risk management process will be iterative to reflect the dynamic nature of project-work, capturing and managing emerging UUW owned risks and reflecting new knowledge in existing risk analysis and estimates of contingency required. We will hold meetings with the CAP to support CAP owned risks, and raise early warnings to the ITA where appropriate. We will continue to use a risk register to document UUW owned risks, develop and maintain appropriate contingency plans and ensure clear ownership of actions. Information on priority risks will be escalated through UUW's governance process to manage stakeholder expectations, enabling the right conversations to take place and evidence-based decisions to be made.

4.4 Our proposed organisational structure and corresponding resource profile

4.4.1 We extracted all our contractual obligations within the CAP Agreement and assessed each obligation on its occurrence (i.e. *will* these obligations need to be actioned in the future, or *might* these obligations need to be actioned in future subject to CAP performance) and frequency. We subsequently used this information to conduct a bottom-up assessment of resource requirements and identify appropriate roles to fulfil these obligations. This has resulted in a proposed UUW organisational structure (see Figure 3). It is important to note that this proposed organisational structure is subject to change and will be reviewed once the successful CAP and ITA bidders have been selected as their respective management structure and construction approach may require UUW to take a different approach.

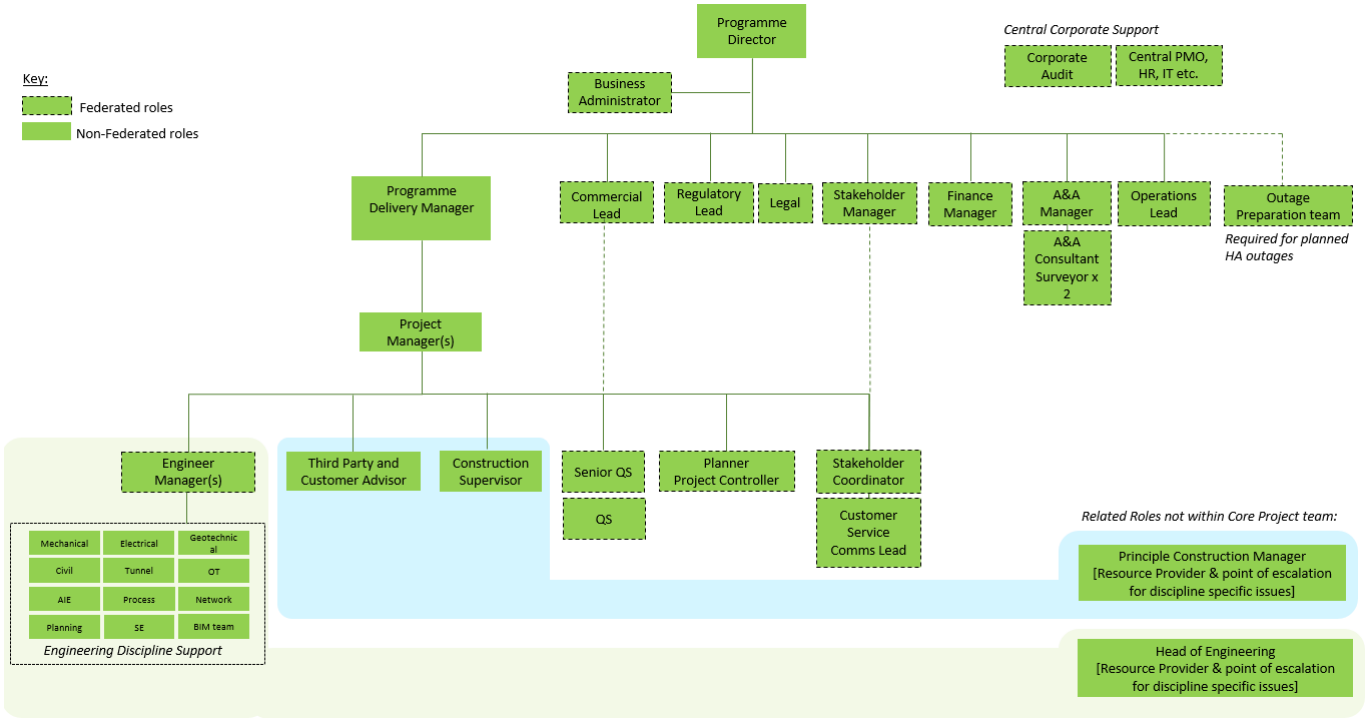
4.4.2 Our organisational structure represents a multi-disciplinary team, allowing us to meet the range of activities set out in section 4.3. We have a focussed construction assurance and programme management function, which will flex in size and range according to the CAP's programme of work. This function will be led by the Whole Life Programme Manager, with separate project teams designed to interface with the CAP's project teams at each geographical location.

4.4.3 Alongside this, we have a set of federated teams to reflect the specialist resource required to deliver our more technical obligations. We have chosen to adopt a federated model as it is more efficient comparative to a dedicated full time team. This will allow us to work collaboratively across various disciplines, support effective decision-making, reduce the likelihood of conflict and teams working in silos, as well as help manage internal resource demands.

4.4.4 The organisational structure contains a mixture of full-time and part-time roles to reflect the demand of expertise to meet our obligations. It also represents the full extent of the UUW team during construction however in reality, the size of this team will flex throughout the construction period to reflect the specific tasks at hand. For example, our engineering team will be at their maximum size

within the first 18 months of the construction period to support the detailed design activities and associated acceptance of CAP design submissions. Beyond this period, our engineering team reduce their numbers to cover residual technical queries.

Figure 3: UUW's Proposed Organisational Structure



Source: UUW internal summary of information.

4.4.5 Our duties will be executed in accordance with the contract – with duties being discharged via the UUW Representative, the only named UUW individual within the contract. That said, various duties will be formally delegated to those team members best placed to more efficiently discharge them. In addition to this, we have identified high-level accountabilities to drive efficiency into UUW activity and decision making. These include:

(a) Programme Director – who is ultimately accountable for UUW duties under the contract, provides project sponsorship (including senior stakeholder management with the UUW Executive Team and Board/ CAP Representatives/ ITA Representatives/ Ofwat Representatives) as well as receiving/ resolving any points of escalation from the wider UUW team

(b) Programme Delivery Manager – who is UUW Representative and acts as the day-to-day liaison with the CAP/ ITA, provides project management oversight of the CAP, including security compliance as well as co-ordination of Project wide activity and interfaces with UUW Corporate

(c) Commercial Lead – who owns the CAP Agreement and ITA Agreement and ensures contractual compliance, monitors the CAP's performance (through the agreed KPI regime), leads the commercial function of the team and procurement of the Approved Assurer as well as raise CAP payments in line with the monthly unitary charge.

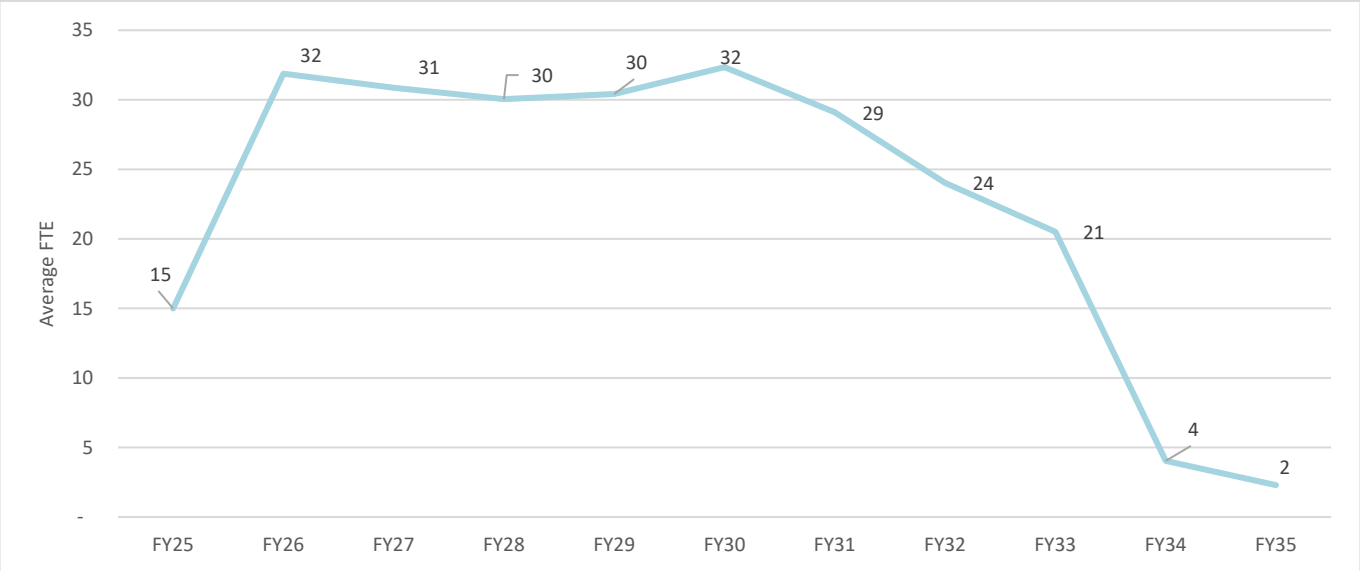
(d) Principal Construction Manager – who provides CAP construction monitoring and oversight (H&S, Environmental, Quality, Customer), reviews the CAP's quality plan and leads on work authorisation activities

(e) Finance Manager – who is accountable for day to day management of all financing and tax matters, monitors the CAP's financial performance, provides internal financial accounting oversight, including

interfacing with the Approved Assurer as well as monitoring of changes to the Unitary Charge over time

4.4.6 Figure 4 illustrates our forecasted resource over the duration of the construction phase. We expect a resource growth in FY26 as the CAP mobilises its site compounds and commences its tunnelling activities. With tunnel sections expected to be brought into service towards the end of AMP8/ early AMP9, we start to reduce our resource demands accordingly.

Figure 4: Proposed UUW's Resource Profile



4.5 Scale and Timing of Investment

4.5.1 The scale and timing of this investment is inextricably linked to the overall business need, with the risk of HA tunnel failure forecast to become intolerable in the 2030s, and the associated scope of work with the replacement 6 single line tunnel sections (52km in total).

4.5.2 Improving the long term resilience of the HA is a critical activity in meeting our long term ambitions, ensuring we continue to deliver water sufficiency and great water quality now and in the future. In particular, the delivery of HARP will protect water supply interruptions and minimise the risk of customer contacts about water quality in the future. We consider this need to be no-regrets investment and remains relevant under all future planning scenarios.

4.5.3 The justification for the overall business need has been provided and accepted by Ofwat in previous submissions, most recently in our Strategic Case within the Outline Business Case submission made in December 2021.

4.5.4 In terms of the scale of this investment, we have assessed our contractual obligations for its occurrence (i.e. *will* these obligations need to be actioned in the future, or *might* these obligations need to be actioned in future subject to CAP performance) and frequency. We believe it is prudent to size the UUW team in line with our core obligations, not every eventuality under the CAP Agreement, to deliver best value for money to customers.

4.5.5 We have undertaken a significant amount of work internally to establish how UUW will manage this set of activities effectively, what organisational capability is required and associated resource demands during the construction phase. This information has been used to inform our proposed organisational structure and internal governance arrangements moving forward.

4.5.6 In terms of the timing of this investment, we have mapped our resource requirements against key milestones within UUW's preliminary construction programme. For example, our engineering resources are mapped against an assumed detailed design duration of 18 months to allow UUW to fulfil its role on

design acceptance. Beyond this period, our engineering input significantly reduces to provide ad-hoc technical input and support. It is important to note that UUW's preliminary construction programme will be superseded by the winning bidder's programme and UUW will need to adjust its resource profiles, and therefore the timing of its investment, accordingly.

4.5.7 We believe there is no overlap with activities to be delivered through base or implicit allowance for future costs within the base cost models.

4.6 Customer Support

4.6.1 At PR19, extensive customer research and acceptability testing was conducted to understand customer support for the overall business need to repair or construct replacement sections of the potable HA single line tunnel sections. Further details of this research can be located in our previous PR19 submission, UUW_WN1_4_Technical_Report_4_Customer_and_stakeholder_engagement.

4.6.2 We have not revisited customer support for HARP for PR24, however wider PR24 customer research has ascertained that customers highly value resilience of supply and protecting asset health.

5. Best option for customers

5.1 Introduction

5.1.1 In order to ensure that our costs represents the best value for customers, we considered the extent of UUW assurance activities in addition to our core contractual obligations.

5.1.2 Our approach to delivering best value is robust and consistent across all of our enhancement cases. Our approach uses a rich mix of metrics to help us drive value and efficiency in developing our business plan. Consistency of the approach is driven through our PR24 Value Tool which allows us to quantify and value environmental and social benefits, costs and risks. For more detail on this approach please see supplementary document *UUW45 - Our approach to deliver best value totex*.

5.2 Options Development

5.2.1 As previously stated, we believe it is prudent to size the UUW team in line with our core obligations, not every eventuality under the CAP Agreement, to deliver best value for money to customers. If an event outside of our core obligations materialised (for example – pursuing a defect liability claim), UUW would meet its obligations as efficiently as possible.

5.2.2 Given the new parties involved under DPC and their associated responsibilities (as articulated in section 3.2), UUW considered the extent of assurance activities that should be adopted.

5.2.3 Table 1 below shows the options considered:

Table 1: Options considered

Option	Description
Light-touch assurance	Minimal UUW assurance activities with high dependence on CAP/ ITA reporting and assurance capability.
Moderate assurance	Moderate UUW assurance activities with moderate overlap on existing CAP and ITA activities.
Maximum assurance	Multiple areas of activity overlap between UUW and other parties to manage UUW's reputation and provide internal confidence to our board. High degree of assurance with the CAP and ITA activities. Represents oversight similar to UUW's current BAU delivery model.
Do nothing	UUW would be unable to fulfil its obligations under the contract, including monitoring the CAP's performance. This would result in (amongst other activities) a high volume of CEs being raised by the CAP as UUW would be unable to respond to CAP submissions in a timely manner. This would in turn increase project costs and corresponding unitary charge payments recovered from customers.

Source: UUW internal summary of process.

5.3 Option Selected

5.3.1 UUW have selected light-touch assurance position alongside its other obligations; this position adheres to the principles of DPC with an arm's length approach being adopted. The CAP and ITA reports will form the basis of our understanding on construction progress, including cost and schedule. Our assurance activities can be articulated within three distinct areas: technical assurance, construction assurance and commercial assurance.

5.3.2 For technical assurance, we have put forward acceptance on 20% of technical documents (the equivalent of a fifth of our normal activity in this area)), which would have the biggest impact on benefits and customer costs should the quality not be right. We reviewed each document to determine the risk and consequence of reducing the governance on each document. We have retained documents that pose a:

(a) High consequence of errors or non-compliance in the documents content,

(b) Critical issue in operating or maintenance the asset, and/or impacting the design life of the asset

(c) Challenge in overcoming if an issue within a document materialised (for example, a well building could be altered whereas the tunnel cannot be amended without an outage)

5.3.3 The types of document requiring acceptance by UUW include final as-built drawings for completion of each section of the works, segment quality management procedures, and agreed levels of impact to existing structures and services. If UUW becomes concerned over the quality of the technical submissions, we can request further documents to review and extend our assurance role accordingly; any additional costs (incurred by delivering an extended set of assurance activities) will be managed through totex sharing mechanism.

5.3.4 For construction assurance, we will have a reduced site presence (comparable to BAU) to reflect the role of the CAP and its responsibility to manage its main contractors/ sub-contractors, and providing assurance that the end product meets UUW's contractual requirements. We have restricted our activities to focus on:

(a) Build quality on the tunnel itself – we will conduct some onsite observations on tunnelling aspects, including the manufacture and storage of tunnel rings. We will also review the CAP's quality records, including segment alignment, ring build records and advancement rates. We believe this approach is justifiable given that the design life of the asset will exceed our contract with the CAP and any issues identified retrospectively will be difficult and expensive to rectify.

(b) Water quality aspects – we will provide additional quality assurance on all product being installed that will be in contact with potable water DWI regulation 31 or WRAS approved. Furthermore, we will review the CAP's quality management plan, reviewing all elements of the plan that come into contact with potable water (tunnel, siphons, well structures, pipelines). We believe this approach is justifiable to reduce the likelihood of customers experiencing from adverse water quality events.

(c) Environmental aspects – we will provide additional quality assurance on pollution and flood management, ensuring there is a robust drainage plan is in place. This will include identifying potential pollution pathways and controls implemented by the site assessment. We believe this approach is justifiable to reduce the likelihood of a pollution event materialising, helping protect UUW's reputation.

5.3.5 For commercial assurance, we will have reduced involvement on compensation events compared to BAU. The ITA will be responsible for determining the validity and classification of a compensation event, accepting a quotation provided by the CAP, and implementing a compensation event. This role is normally fulfilled by UUW under a BAU delivery model. Under DPC, UUW will provide reactive assurance against a compensation event granted by the ITA, challenging a compensation event assessment when appropriate.

6. Cost efficiency

6.1 Approach to cost build

6.1.1 UUW has conducted a bottom-up assessment of resource requirements to fulfil our obligations. These resources are predominately underpinned by a set of internal rates, which are benchmarked against similar roles in other sectors. This allows us to offer a competitive market rate to attract the right expertise to help support the delivery of our Appointee activities, whilst offering best value for money to customers.

6.1.2 We used the following methodology to produce an AMP8 Totex value within this enhancement case:

(a) Extracted UUW's contractual obligations from the CAP Agreement and assessed each on occurrence and frequency; this determined our core set of obligations. Any obligation that *will* occur has been classified as a core obligation. If an event outside of our core obligations materialised, UUW would meet its obligations as efficiently as possible.

(b) Engaged with internal subject matter experts to determine which roles would be most appropriate (and corresponding hours) to deliver these core obligations; this determined the number and duration of roles required.

(c) Mapped our core obligations to a capability framework to understand whether we have in-house expertise to manage this project as the Appointee; this determined whether we applied an internal or external rate to each role. We have limited the number of roles with external rates (as these are more expensive than internal rates) to areas in which UUW does not have the in-house expertise to fulfil (for example, tunnelling expertise) or the duration of the role is not sufficient to justify value for money to recruit these roles internally. Internal rates are benchmarked against similar roles in other sectors and allows us to offer a competitive market rate to attract the right expertise to help support the delivery of our activities, whilst offering best value for money to customers.

(d) Utilised UUW's preliminary construction programme to profile the identified hours accordingly; this determined when we are likely to incur these costs and allowed us to apply the number of hours in an intelligent manner, flexing our resourcing in line with specific construction activities and keeping the number of hours to a minimum. For example, as each tunnel section achieves Construction Completion and Operational Readiness – UUW resources reduce accordingly.

(e) Analysed the profiled data to produce a AMP8 Totex value

6.2 Benchmarking Assessment

6.2.1 Given that HARP is a DPC pathfinder project within the Water Industry, there is currently no data available to undertake a direct benchmarking comparison.

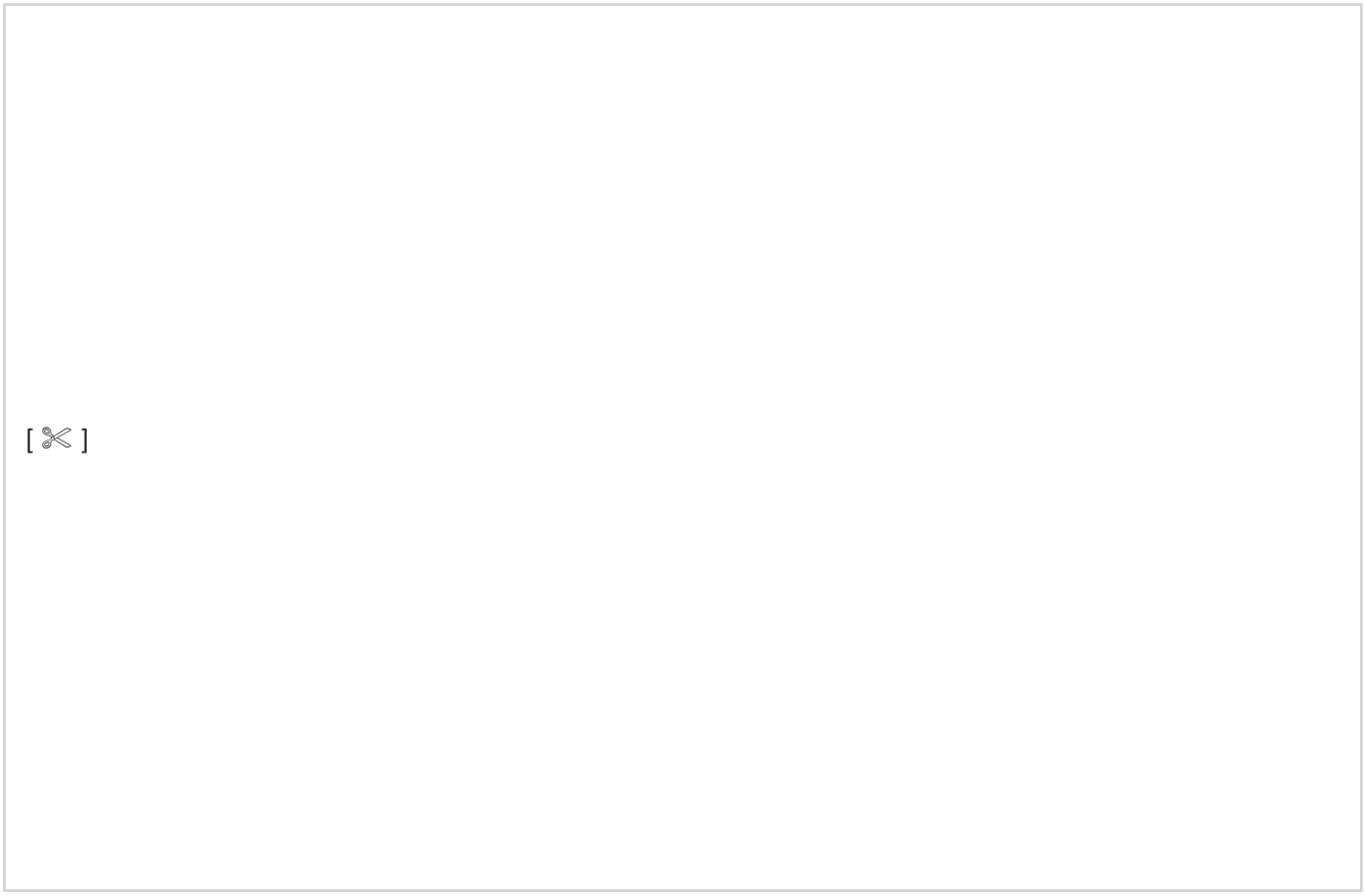
6.2.2 That said, UUW have continued assess and challenge its own costs for project development, procurement and delivery against sector norms provided by Ofwat at PR19 Final Determination. Based on typical % of total construction costs of between 2% and 4%, and using the latest known construction costs shared through working level discussions with Ofwat, we have determined that our costs are 4.65%. Whilst our costs are above the sector norms range, we believe that this is attributable to an extensive DPC procurement period with associated fixed costs. These costs reflect the need to engage with new investor and contractor markets, which would be considered an atypical cost (outside of sector norms). This is followed by extensive set of contractual negotiations and resources for tender evaluation over a two year period.

6.2.3 In addition, we conducted a cost to serve comparison with other historic UUW projects. Cost to serve is defined as the measurement of activity costs to meet customer requirements and is represented as a % of the construction costs of a project. In order for it to be comparable with historic UUW projects, we

were required to make some cost assumptions on the management costs for the CAP and ITA. These assumptions are consistent with our Outline Business Case submission to Ofwat in December 2021.

6.2.4 As shown by Figure 5, UUW's costs plus appropriate elements of CAP and ITA costs on HARP are delivering better value for customers compared with other historic projects. Whilst the 5.4% outperforms historic project, a proportion of this cost is associated with ITA and CAP management costs, which at this stage are unknown and subject to thorough competitive process to deliver best value for money for customers.

Figure 5: Delivery Phase CTS % of Construction Value



Source: CTS Resource Assessment

6.3 Third Party Assurance

6.3.1 We have engaged with specialist third parties to provide independent assurance against our proposed resourcing model. We have reached out to an independent advisory team, who have extensive experience in delivering major infrastructure projects across the UK through special purchase vehicle (SPV) delivery models, to help inform the UUW's organisational structure. The advisory team suggested that larger client team than is currently proposed would be required. Since this review we have further assessed the resource requirements following a number of changes to UUW's obligations under the CAP Agreement (e.g. more information being provided for acceptance than approval and a streamlining of processes), which has helped to drive a more efficient team structure.

7. Customer protection

7.1 Introduction

7.1.1 It is important that customers have confidence that we will deliver the enhancement schemes that get reflected in our PR24 final determinations and they are suitably protected in the event of non-delivery, or if there are material changes to deliverables (including changes to dates), which leads to a change in cost (including changes in the timing of required expenditure). Ofwat proposes that, if companies fail to deliver or are late delivering improvements to customers, then price control deliverables (PCDs) should, where appropriate, be used to compensate customers. In our PR24 *Chapter 8 – Delivering at Efficient Cost, section 8.8.9* we have proposed an approach to PCDs that aims to provide customer protection, such that customers are fairly compensated for non-delivery (such as due to a change in regulatory requirements) or late delivery (including as a result of a change to a regulatory date), between PCDs, any related ODI underperformance payments, and cost sharing arrangements.

7.2 Price Control Deliverable

7.2.1 We have not included a PCD for this area as it is small in size, and below Ofwat's indicated threshold.

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