WSX-C16 – Enhancement costs – wastewater investigations

Response to Ofwat's PR24 draft determination

Wessex Water
YTL GROUP

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Representation reference: WSX-C16

Representation title: Enhancement costs – wastewater investigations

CONTENTS

1. Summary

The wastewater investigations programme has materially changed since our business plan submission in October 2023, particularly with respect to our storm overflow investigations programme. Ofwat recognised this uncertainty in its draft determination and has stated that its final determination will reflect changes to companies' programmes.

We request Ofwat sets an allowance of **£38.4 million** in enhancement funding for our wastewater investigations programme in AMP8. This is a reduction of £31 million on that value that Ofwat assessed for its draft determination. This reflects the following:

- We have updated our programme to align with the latest WINEP, including the addition, removal and change of investigations from our October 2023 submission.

- We have reduced the scope (and costs) of our storm overflow investigations, to better align with our view of the Environment Agency's expectations based on their draft guidance.

We strongly believe that our revised requested allowance should be funded in full. In its Draft Determination, Ofwat applied a 40% adjustment based on a deep dive assessment, which resulted in a reduction in the overall totex allowance (compared to the value that Ofwat assessed) to £41.72m. However:

- A proportion of this related to uncertainty over the storm overflows investigations programme. We consider our revised proposals – which have reduced the scope (and costs) of this element of the programme – fully address this concern.

- A further proportion related to concerns over cost efficiency. We are confident that our costs are efficient. A 20% cut to this allowance would:
    - Curtail our ability to determine the most cost-effective environmental solutions for PR29.
    - Risk the adoption of ineffective solutions to reduce Wessex Water's environmental impacts.
    - Impact academic and stakeholder partnership work and efforts to ensure we are an innovative and environmentally conscious organisation; and
    - Curtail our opportunities to innovate.

This representation sets out further information, expanding on the above, which evidences why there is a clear enhancement need for our revised investigation programme; why this represents the best option for customers; and how we have ensured cost efficiency in deriving our cost estimates. We therefore request that Ofwat allows our revised cost allowance.

Table 1 below summarises the investigation programme that Ofwat assessed for its Draft Determination; its provisional decision; and our revised programme and proposed cost allowance.

Table 1 – Summary of changes requested.

Data table line	Assessed submission*	Draft Determination allowance	Our requested allowance (August 2024)
CWW20.64 Total number of investigations	418 (of which 370 were storm overflow investigations)	418 (of which 370 were storm overflow investigations)	425 (of which 392 are storm overflow investigations)
CWW3.114 Total investigations; totex	£69.53m	£41.72m	£38.43m

* Ofwat's Draft Determination assessment was based on an updated submission to align with the Sept'23 version of the WINEP. This differed from our October 2023 Business Plan submission documents. Our Oct 2023 version had also, incorrectly, assigned chemical investigations against this enhancement driver line.

Table 2 presents a further breakdown of the number of investigations and the requested costs for the updated wastewater investigations programme.

Table 2 – Summary number of wastewater investigations and associated costs

Data table line	Our requested allowance (August 2024)
CWW20.62 Number of Storm overflow investigations (WINEP)	392
CWW20.61 & 62 Number of other Desktop/Simple investigations	19
CWW20.63 Number of other complex investigations	14
CWW20.64 Total Number of investigations	**425**
CWW3.108 Storm overflow investigations Totex	£12.59m
CWW3.105 & .108 Other Desktop/Simple investigations Totex	£3.369m
CWW3.111 Other Complex investigations Totex	£22.47m
CWW3.114 Total Investigations; totex	**£38.43m**

2. Ofwat's approach to setting allowances

Ofwat has undertaken a deep dive approach to the assessment of Wessex Water's wastewater investigations and has applied a 40% adjustment, as set out in Table 3. This results in a reduction in investment from the value that Ofwat assessed (£69.53m) to £41.72m. We note that Wessex Water is one of seven companies subjected to deep dive assessment by Ofwat, with adjustments ranging from 20% to 50%.

Table 3 – Wastewater investigations – summary of draft determination adjustment.

Element	Description	Adjustment
Need for investment	Partial pass: The investment partly meets the criteria for enhancement investment and additional customer funding.	10%
Best option for customers	Minor concerns: We have minor concerns whether the investment is the best option for customers.	10%
Cost efficiency	Some concerns: We have some concerns whether the investment is efficient. The company does not provide sufficient and convincing evidence that the proposed costs are efficient. 20% adjustment.	20%
Customer protection	Significant concerns. We have significant concerns whether the company's proposal fully protects customers from non-or under delivery.	-
	Total	**40%**

We welcome that Ofwat has undertaken a review of our specific investigations programme. Given the bespoke nature of companies' investigations programmes, it is important that cost requests are considered in the context of each company's specific requirements.

However, we consider that our investigations programme fully meets Ofwat's criteria for enhancement funding – particularly in light of the WINEP changes and further regulatory engagements that has occurred since October 2023, and the updates to our programme that have since been made to reflect that. In the subsequent sections of this representation, we set out our reasons for this in more detail.

3. Required adjustment to cost allowance

We request Ofwat sets an allowance of **£38.4 million** in enhancement funding for our wastewater investigations programme in AMP8. This is a reduction of £31 million on our original business plan submission value. This reflects the following:

- We have updated our programme to align with the latest WINEP, including the addition, removal and change of investigations from our October 2023 submission.
- We have reduced the scope (and costs) of our storm overflow investigations, to better align with our view of the Environment Agency's expectations based on their draft guidance.

3.1. Changes since October 2023 submission

In the following table we provide a driver-by-driver breakdown of our wastewater investigations, aligning with the latest WINEP (August 2024).

Table 4 - Wastewater investigations - driver cost breakdown

WW investigation WINEP driver	Nr of investigations by type (as per CWW20.61-63)			Totex by investigation type (as per CWW3.105, 108 & 111) (£m)			Total number	Total totex (£m)
	Desk based	Simple	Complex	Desk based	Simple	Complex		
25YEP_INV	-	-	1	-	-	4.301	1	4.301
BW_INV2	-	-	3	-	-	1.516	3	1.516
BW_INV5	-	-	1	-	-	8.590	1	8.590
EnvAct_INV1	-	-	1	-	-	3.563	1	3.563
EnvAct_INV2	-	-	1	-	-	*	1	*
EnvAct_INV3	-	-	1	-	-	*	1	*
EnvAct_INV4 (storm overflows)	-	392	-	-	12.593	-	392	12.593
HD_INV	1	6	6	0.422	1.536	4.500	14	6.458
SSSI_INV	-	1	-	-	0.161	-	1	0.161
SW_INV	3	-	-	0.618	-	-	3	0.618
WFD_IMPg	1	-	-	0.105	-	-	1	0.105
WFD_INV	1	1	-	0.158	0.203	-	2	0.361
WFDGW_INV	-	4	-	-	0.166	-	4	0.166
Total:	**7**	**404**	**14**	**1.303**	**14.659**	**22.470**	**425**	**38.432**

*EnvAct_INV2 and EnvAct_INV3 costs have been assigned against EnvAct_INV1. These are investigations/pilots to assess site suitability for continuous water quality monitoring in estuaries (INV1), inland complex (INV2) and coastal (INV3).

3.1.1. Wastewater Investigations

Our latest submission aligns with the latest WINEP (August 2024), which has seen a number of additions, removals and change of investigations from our October 2023 submission.

Aside from minor cost changes due to adjustments to delivery profiling, in the following table we provide a list of changes to our wastewater investigations programme.

Table 5 - Changes in WINEP wastewater investigations since Business Plan submission

Action ID	Driver	Action Name	Change
08WW103150a	WFD_IMPg	Delivery of measures to reduce nutrient (N&P) loadings in Durleigh Reservoir	Holding line in WINEP at time of business plan submission – no costs included. Whilst this has an improvement action, we have assigned against wastewater investigations as the scheme involves monitoring removal rates through our recently constructed wetland upstream of Durleigh Reservoir (and catchment nutrient balancing in the area) to see if we already achieve the nutrient load reduction targets, to inform potentially future works in AMP9.
08WW103157a	HD_INV	Investigation and options appraisal, to assess and recommend approaches to restore Curry Moor SSSI to favourable condition	Holding line in WINEP at time of business plan submission – no costs included.
08WW100014a	BW_INV5	Realtime water quality monitoring of amenity waters	Three newly designated inland bathing waters (May 2024), however costs already included in plan under 08WW100014a Realtime water quality monitoring of amenity waters, which had covered 20 potential bathing/amenity water sites. Costs re-allocated accordingly.
08WW102226a	BW_INV2	***Holding line for newly designated bathing water at River Avon at Fordingbridge***	
08WW102233a	BW_INV2	***Holding line for newly designated bathing water at River Frome at Farleigh Hungerford***	
08WW102230a	BW_INV2	***Holding line for newly designated bathing water at River Tone at French Weir Park***	

3.1.2. Storm Overflow Investigations

Our business plan submitted in October 2023 including 148 storm overflow studies (simple and complex), although the September 2023 WINEP had identified 370 urban pollution modelling (UPM) studies (simple and complex). The draft determination was on the basis of the September 2023 WINEP, summarised in Table 6 below.

Table 3 – Storm overflow investigations and costs

Data table line	October 2023 submission	Assessed submission for Draft Determination	Our requested allowance (August 2024)
CWW20.62 Number of Storm overflow investigations (WINEP)	148	370	392
CWW3.108 Storm overflow investigations Totex	£28.8m	£48.2m	£12.6m

The storm overflow investigation programme has changed over time due to the assumptions of the type of investigation required and the extent included on the WINEP. The uncertainty is because of the Environment Agency's (EA) change in approach from needing complex UPM studies, to their current position that most storm overflow investigations will not need UPM studies. UPM studies are complex as they require water quality sampling and modelling to determine the improvements needed to achieve 'no ecological harm'.

Since the business plan submission, the EA has introduced a dilution criterion that has resulted in a lower number of storm overflows requiring detailed Urban Pollution Management studies. ✂. If the storm overflow's dry weather flow is low compared to the flow in the receiving river, then due to the high dilution, the overflow is deemed unlikely to cause 'harm' to the environment. In this situation, the overflow can be designed to achieve a 10 discharges per year target performance. This avoids the need to undertake UPM studies, which are complex and expensive.

The EA are suggesting that the majority of storm overflow will no longer need these UPM studies, so making the investigations far more efficient in terms of costs and time. We agree with the EA that the reporting of the storm overflows that are screened out, do not need detailed reports.

The latest version of the PR24 WINEP (August 2024) lists 392 storm overflow investigations. Based on our view of the EA's latest guidance, our plan assumes a significantly lower number of complex UPM studies and that the majority of the WINEP listed storm overflow investigations (now 392) will only require simple desktop modelling studies to develop options to improve performance to 10 discharges per year. This has significantly reduced our storm overflow investigation cost estimate to £12.6m in our updated plan.

For simplicity throughout this PR24 process, we have assigned all the storm overflow investigations against the simple investigations line (CWW20.62), in the absence of knowing which specific sites would require a UPM study.

Our revised plan also includes an allowance for undertaking Poole Harbour shellfish water investigations, as an emergent need. This is not currently included on the WINEP as an action line, and we are engaging with the EA about a potential swap with another storm overflow investigation line, thus retaining the same number of investigations in our plan.

We do note that the storm overflow investigations programme is still subject to potential change whilst we await Environment Agency final guidance.

4. Rationale

Over the past 25 years we have worked with the Environment Agency and others to investigate where there are concerns that the operation of our assets may have an impact on the water environment. Our investigations typically follow the process summarised in Figure 1. They are instigated when our regulators identify an environmental risk that our operations may affect achievement of environmental targets or are prompted by a regulatory change or new designation. Environmental risks identified through this process are included in the WINEP for investigation in the next AMP.

In our October submission we presented information about our investigations in the following documents

- WSX16 - Wastewater networks plus strategy and investment. Section 7.7. Water Quality Investigations
- WSX12 – Water resources strategy and investment. Section 3.2 Water resources investigation WINEP actions
- WSX25 – Improving Biodiversity Section 3. Restoring & enhancing biodiversity on our landholding and Section 4 Working in partnership to improve and restore biodiversity

Figure 1 - The investigation process, showing how an investigation is used to inform subsequent implementation actions

Our approach is to use investigations based on sound science to inform future investment decisions. We strongly believe that undertaking investigations is in the best interest of customers and the environment. Investigations typically have two potential outcomes:

- Our operations are found to have a negative impact on the environment, leading to evidence-based investment in a subsequent AMP. The environment is improved, and the expenditure of customer money is justified.
- Our operations are found not to impact on the environment. Customers are protected from unnecessary expenditure.

Both outcomes protect customers by ensuring investment is justified or by ensuring unnecessary expenditure is avoided. In the following sections we address Ofwat's concerns against the need for investment, best option for customers, cost efficiency and customer protection.

Within our business plan submission, customer research supported investment in the 'Excellent river and coastal water quality outcome', document ref: WSX06 Customer Research Triangulation. Our research showed that 73% of customers worry about the quality of water in the rivers and 57% believe that untreated sewage from water companies has the most negative impact on rivers. Following on from our 'Your Say Your Future' engagement, customer highlighted the following positives, which supports our environmental investigation approach:

- Customers happy to see the issue being addressed.
- Smart sewers seen as good value.
- Collaboration welcomed by respondents, especially stakeholders.

4.1. Need for investment

Partial pass: The investment partly meets the criteria for enhancement investment and additional customer funding. 10% adjustment.

Ofwat's Draft Determination states:

"The company's investigations programme currently contains a large number of simple investigations and a small number of desk-based and complex investigations, covering 11 different WINEP drivers. However, it states that its programme of investigations may not yet be final and that there is uncertainty around which schemes, particularly the storm overflow investigations, are required by 2030 and which might be deferred until 2035.

It proposes to defer over 200 storm overflow investigations to 2030-2035 to avoid the need to implement expensive urban pollution management (UPM) studies by 2027. It is unclear whether the Environment Agency (EA) has agreed to the deferrals, and the company acknowledges that it may need to update its data tables once confirmation has been received from the EA.

Other water quality investigations, such as for wetlands, the impact of nutrients, bathing waters and shellfish waters appear to be well defined and align with the water industry national environment programme (WINEP).

We are unable to fully pass the need for this enhancement investment when the proposed programme is not finalised."

Wessex Water response – Storm overflow investigations

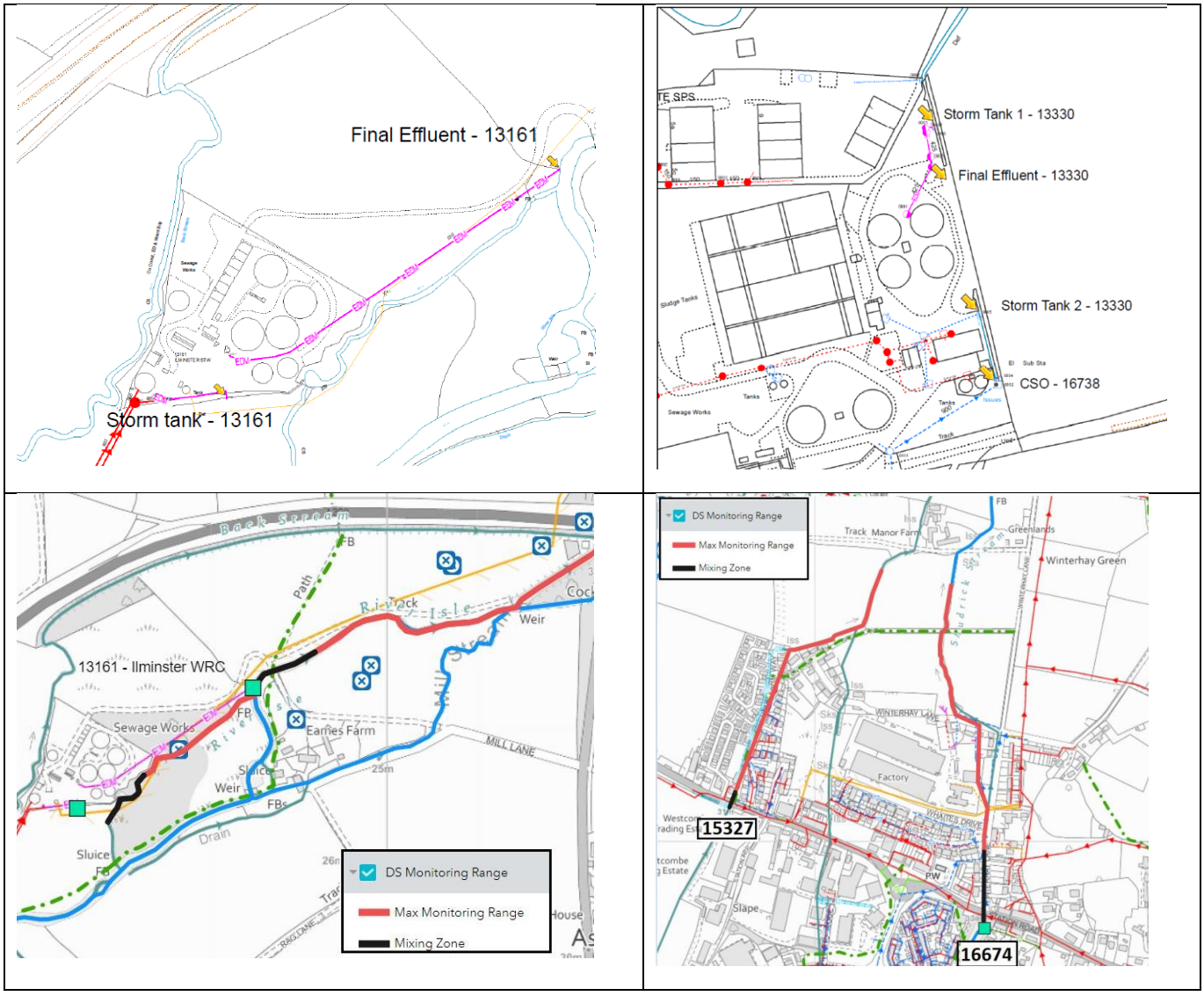
In our October 2023 business plan submission there was uncertainty in the scale of required investment and the uncertainty in the storm overflow investigations programme

For the reasons set out in Section 3.1.2, the scale of this uncertainty has reduced. To reflect this, our latest view of storm overflow investigations requirement is £12.6m of expenditure, including transitional spend. This is significantly lower than the costs that Ofwat assessed in its Draft Determination, due primarily to a reduction in scope. The reduction is greater than the 10% cut applied by Ofwat in its Draft Determination.

We have reported all storm overflow investigations against CCW3.108 and CCW20.62, which are the Simple/Desktop appraisals. We have not assigned any against the Complex investigation (lines CWW3.63 and CWW20.111). This is because we do not know the mix of complex compared to Simple/Desktop appraisals. We have started appraising the AMP8 improvement schemes against the draft dilution criteria and have currently identified a dozen clusters that may require UPM studies, but there remains some uncertainty.

Where there is more certainty that a UPM study is likely, we are using transitional funding to undertake water quality sampling later in summer/autumn 2024. The following figure shows some locations where we are planning on undertaking water quality monitoring.

Figure 2 - Examples of our planning to undertake water quality monitoring as part of the UPM investigation



We have also allowed for an investigation for the aggregation requirement in Poole Harbour following the recent addition of the shellfish water drivers (SW_IMP) that has been included onto the WINEP. The WINEP does not include an investigation driver, but we have included an allowance in Line CWW3.62 to undertake this Poole Harbour investigation, as this is required to inform AMP8 'no regrets' improvement investment and also future improvement investment that will likely be necessary.

See also document WSX-C11 – 'Enhancement costs - storm overflows' Section 4.5 regarding storm overflow investigations.

Wessex Water response – other wastewater investigations

With respect to the other (non-storm overflow) investigations we welcome that Ofwat acknowledge that the *"other water quality investigations…appear to be well defined and align with the water industry national environment programme".* Our wastewater investigations are driven by a number of key pieces of legislation including Habitats Directive, the Water Framework Directive and the Environment Act. As such they are a legal requirement for water companies to deliver and are in the process of being agreed through consultation with the Environment Agency and Natural England using Action Specification Forms (ASFs), as per the WINEP process. Investigations under these

drivers are designed to provide a firm basis for decision making and ensure the most cost efficient and effective solutions are adopted. The investigations will ensure investments in future AMP's can be applied to mitigate and control risks to the environment and that unnecessary action and cost is not incurred, thus ensuring the best option for customers is taken. Risks controlled through the outputs and recommendations of the wastewater investigations include;

- the protection and improvement of European and nationally designated sites such as Special Areas of Conservation and Sites of Special Scientific Interest. Wessex Water has a significant number of these sites which have more stringent environmental targets than other areas. Poole Harbour SPA would be an example of this.
- the presence and fate of emerging chemical contaminants and microplastics in sewage and sewage sludge and the risk that they pose to the environment and human health, and the investment that may be required to address them.
- the performance of nature based solutions such as wetlands and how these may be used to deliver environmental improvements in the future.

We note that in the deep dive assessments for United Utilities, Southern Water and Anglian Water Ofwat has similarly stated that *"The proposed investment is consistent with the company's water industry national environment programme (WINEP) schemes".* In the case of these three companies, no efficiency adjustment has been applied against the Need for Investment.

For these reasons, we consider our adjustment to our storm overflows investigations programme addresses Ofwat's concern in this area, and we request that the 10% adjustment is not applied against the Need for Investment criteria.

4.2. Best option for customers

Minor concerns: We have minor concerns whether the investment is the best option for customers. 10% adjustment.

Ofwat's Draft Determination states:

"The company claims that there is uncertainty surrounding the requirements for storm overflow investigations.

Wessex Water explains that the scope of investigations can vary, but that they are likely to include similar elements in terms of staff time, consultancy support, ing [sic] *equipment, water quality sampling and analysis, research, and stakeholder engagement. It also states that there is a lot of uncertainty around the scope requirements for UPM studies, and that its plan is based on information available at the time of submission. However, the company acknowledges that the programme and the specific requirements remain uncertain.*

Following insight from the EA, it could reasonably be expected that a large proportion of storm overflow investigations will be simple, and/or the company will be able to utilise previous studies to meet the EnvAct_INV4 requirements.

We have minor concerns regarding the inconsistencies in the scale and scope of the company's programme and ongoing uncertainty around the full extent and complexity of the programme."

Wessex Water response

As stated above under 'Need for Investment', and in Section 3.1.2, the introduction of a dilution criterion for storm overflows has resulted in a significant reduction in scope and fewer storm overflows requiring detailed UPM studies compared to our assessment at the time of the October 2023 business plan submission. This has led to a significant reduction in our expenditure requirements in this area – we now forecast £12.6 million in costs for these investigations.

For these reasons, we consider our adjustment to our storm overflows investigations programme addresses Ofwat's concern in this area (which focused on the uncertainty around this element of the programme) and we request that the 10% adjustment is not applied against the Best option for customers criteria.

We strongly believe that our revised investigations programme represents the best option for customers as they protect customer interests by ensuring that our investment decisions are based on sound science, with improvements either justified or negated based on the outcome of the investigation.

The avoided costs can be significant and can best be illustrated by examples from our AMP7 programme. An early draft of the AMP7 WINEP included the requirement for nitrogen removal at five small WRC that discharge to ground, with an estimated cost of £20m-£25m. We were concerned that this investment may not be justified and at our request, the Environment Agency agreed to amend these WINEP improvement actions to WINEP investigations. Our investigations included the drilling of observation boreholes and an extensive programme of groundwater quality monitoring that found denitrification was occurring in the underlying chalk, negating the need for improved treatment at three of the five sites. These investigations were completed at an approximate cost of £0.25m and protected customers from up to £15m of unnecessary investment, with only two of the five sites included in our PR24 WINEP for enhancement.

In addition to the customer protection afforded, investigations present an opportunity to drive innovation. Wessex Water has a proven track record of delivering industry shaping innovation, such as our award-winning work at Warleigh Weir (See Annex 1) which underpins our approach to our AMP8 Realtime water quality monitoring of amenity waters investigation (WINEP ID 08WW100014a). This investigation will see the roll-out of real time water quality information at up to 20 amenity waters in AMP8 alongside a programme of spot sampling to gather evidence to inform (or negate) improvements to our assets and in the wider catchment in subsequent AMPs.

The innovation delivered through this investigation has been closely watched by other water companies and the data collected (valued at around £181k) continues to drive innovation; we are delighted to be providing this as our contribution to the River Deep Mountain AI project, recently funded through the Transform Stream of Ofwat's fourth Water Breakthrough Challenge. We are also a partner on the Self-Calibrating Sensor Networks for Sustainable Water Management (SCSN), bringing our experience from Warleigh and estuarine and coastal monitoring trials of continuous water quality monitoring in Poole Harbour and at Bournemouth and Boscombe Pier bathing waters.

Our investigations also represent a channel through which evidence for new and emerging technologies can be collected. In AMP6 we constructed our award-winning wetland at Cromhall WRC, the first integrated constructed wetland for phosphorus removal at a Wessex Water WRC. We firmly support the use of such nature-based solutions where appropriate and recognise their potential for wider deployment at WRCs, but also for other applications such as treating effluent from storm overflows or helping to manage sediment or agricultural chemicals in runoff. We also recognise that there is a limited amount of evidence relating to their costs and benefits. In the development of the AMP7 WINEP we proposed an investigation to monitor and quantify the benefits of the Cromhall wetland. The report from this investigation has been widely shared with other water companies, regulators and with Defra and was used by the latter to inform their decisions about whether Catchment Nutrient Balancing could form part of the mechanism for delivering the Levelling Up and Regeneration Act. The summary report is publicly available on our website[1] with the full report available on request. Additionally, the construction of the Cromhall wetland and investigation leveraged three NERC funded PhD research projects through the GW4 FRESH research programme, enabling increased academic robustness and peer review of data collected. The PhD research covered nutrient cycling, pathogen and microplastics and emerging contaminant cycling and removal across the

[1] Cromhall Wetland investigation_Final Report (wessexwater.co.uk)

wetlands, critical to understanding and advancing the use of nature based solutions and at a fraction of the cost had this PhD research followed a full cost recovery approach with the Universities of Bath and Bristol.

The AMP8 Water Industry Strategic Environmental Requirements (WISER), published by Defra in 2022 made clear that *"The Environment Agency and Natural England expect water companies to consider using catchment and nature-based solutions more broadly, wherever they can achieve whole or part of the environmental outcome"*. The dearth of evidence surrounding the performance of nature-based solutions in the UK water industry, particularly where stringent permits may need to be met, has led water companies to fall back on low-risk 'grey' asset solutions.

Our AMP8 WINEP programme includes the WINEP Action *08WW100012a Benefits of wetlands investigation*, the aim of which is to quantify the benefit of wetlands created in PR19 through Wessex Water investment and provide a recommendation of an appropriate long-term monitoring programme to give an ongoing understanding of the performance of wetlands. This will be assessed in terms of water quality, in particular sanitary parameters, nutrients and faecal indicator organisms where appropriate, and wider multiple benefits, including biodiversity and natural capital assessments, and how performance changes over time as wetlands mature and become established. More intensive sampling will be undertaken at a representative sample of wetlands to assess for example, seasonal and diurnal water quality performance.

Aligning with Government direction, by being innovative and providing an evidence base to steer future investment we firmly believe that such investigations represent the Best Option for Customers. We also consider that adjustments of the magnitude in the Draft Determination (40%) would curtail our ability to trial such high-risk high-reward approaches that benefit our customers, the environment and the wider water industry. Furthermore, our plans of utilising and supporting local research partnerships with Bath, Bristol, Exeter, Bournemouth, and Plymouth universities would be significantly curtailed. A 40% cut on investment would require us to limit the level these organisations can be involved in WINEP delivery. The implications are that the innovation and cutting-edge research is eliminated from these investigations and with it the same access to academic peer review. This would have the additional impact of limiting the pool of talent available to the water industry. In addition to support with regulatory outputs delivery, universities provide a vital function in moving the science forward and developing the next generation of environmental professionals required for AMP8 and AMP9 delivery. If Wessex does not fund this research, no other organisation will step into the gap and the risks of poor investment decisions and skills shortages within the industry will remain.

4.3. Cost efficiency

Some concerns: We have some concerns whether the investment is efficient. The company does not provide sufficient and convincing evidence that the proposed costs are efficient. 20% adjustment.

"Wessex Water explains that investigations were costed on a case-by-case basis, taking a bottom-up approach, but that costs for each investigation vary depending on the specific circumstances. It also explains that it has used previous experience and supplier quotes to inform these investigations and efficient costs.

For storm overflows investigations, the company has developed unit costs for different scopes in the absence of site-specific details and requirements but that it has based the maximum cost on information provided by the EA.

The company explains that because the scope and costs for some investigations have evolved over time through discussion with the EA, the Ofwat-defined categories (desk-based, simple and complex investigation) do not necessarily align with the cost banding of its view of complexity. We are concerned, therefore that unit costs proposed may not compare with other companies.

We are unclear whether the external assurance looked in detail at investigations as the third-party assurer does not appear to specifically mention this investment area.

The company is a significant outlier on desk based, simple and complex surveys compared with the industry median costs. The company does not provide sufficient and convincing evidence to justify why its higher costs are efficient.

We have some concerns regarding the uncertainty around the scope of investigations that are not yet finalised and the efficiency of costs."

Wessex Water response

Our water quality investigations have been costed bottom-up, as noted by Ofwat above. Our bottom-up cost estimation approach is set out in Annex 4. In rest of this section, we provide specific examples of investigations and the basis of their costs, with supporting evidence in the form of supplier quotes, where relevant. We consider this evidence demonstrates that we have ensured cost efficiency in deriving our cost estimates. Based on this, we request that the 20% adjustment is not applied against the Cost efficiency criteria.

Table 7 provides a breakdown of the costs for our Porlock Bay shellfish water investigation (WINEP Action ID 08WW100020c). This is a comparatively small investigation and is classed as a desk-based investigation in the WINEP. At the time that the WINEP was compiled the lead local Environment Agency officer described this (and our two other shellfish water investigations) as being a desk-based risk assessment however, during further discussions it was apparent that following the desk study, a monitoring programme will be required and coastal modelling may also be required. This led to uncertainty over the scope and classification (desk-based, simple or complex) acknowledged by Ofwat in the response above. Indeed, depending on the outcome of the desk-based assessment, this investigation could fall into the simple or complex classifications. Our cost allowances included sampling and coastal dispersion modelling.

Table 4 – Cost breakdown and basis of costing, 08WW100020c Porlock Bay shellfish water investigation

Element	Description	Cost	Basis
Staff time	Project management, stakeholder liaison, delivery and analysis, reporting	£91k	Assumes approximately 4 days per month over project duration, based on typical consultant hourly rates.
Staff time	Sample collection	£14k	Internal sample collection cost, to collect samples listed below.
Laboratory analysis	Processing samples	£17k	Assumes 2 WRC crude sewage and final effluent samples and six river water quality samples collected twice monthly over one year and analysed at Wessex Water laboratories.
Consultant support	Coastal modelling	£65k	Based on dispersion modelling quotation in AMP7 from external supplier for bathing water investigation (See Annex 2).
	Total	£188k	

A further example, this time for a complex investigation, is shown in Table 8 for our planned AMP8 Realtime water quality monitoring of amenity waters investigation (WINEP ID 08WW100014a). This investigation builds on the work at Warleigh Weir and aims to provide information on real time risk from bacterial contamination at locations where rivers and coastal areas are used recreationally at a minimum of 20 sites in AMP8. As bacterial concentrations cannot currently be measured in situ, this investigation aims to:

- Implement a hybrid approach utilising real time monitoring of proxy parameters and laboratory analysis of spot sampling with machine learning to provide an estimation of risk at the point of use.

- Carry out monitoring upstream of the recreational site to identify potential sources of bacterial contamination affecting the water quality at this location (and how this might be addressed, e.g. through asset improvements, catchment nature-based solutions, reporting other sources to EA etc).
- Make real time predictions of risk to recreational users which may be available through a web-based app (or similar) to be viewed at the point of use.

Through our AMP7 Warleigh Weir investigation we have trialled different monitoring technologies and approaches to characterise the upstream catchment. The knowledge that we have gained through that investigation has allowed us to adapt our approach and apply this to ensure that we deliver our AMP8 WINEP commitment in the most efficient way. The costs presented in Table 8 equate to approximately £0.49m per site, less than half the cost of the Warleigh Weir investigation (£1.1m).

Although similar to the Continuous Water Quality Monitoring (CWQM) requirement under the Environment Act in terms of technology (continuous monitors), we have ensured that there is no overlap and duplication of effort between this investigation and the roll-out of CWQM under the Environment Act. The Environment Act has specific requirements about the placement of monitors in relation to outfalls (storm overflows and WRCs), which do not always align with locations that are used for amenity purposes.

Table 5 – Cost breakdown and basis of costing, 08WW100014a Realtime water quality monitoring of amenity waters (17 sites)

Element	Description	Cost	Cost per site	Basis
Staff time	Project management, stakeholder liaison, delivery and analysis, reporting	£836k	£49k	Assumes dedicated full time employee with support from other staff members for duration of project, based on typical consultant hourly rates.
Staff time	Sample collection	£452k	£27k	Internal sample collection cost, to collect samples listed below.
Technology	Artificial Intelligence /machine learning to provide water quality alerts	£6,059k	£356k	Using supplier costs incurred for the Warleigh Weir investigation, pro-rata to number of sites in this investigation (Annex 3).
Laboratory analysis	Processing samples	£440k	£26k	Informed by Warleigh Weir investigation. Assumes each amenity water (20) and five upstream sample points monitored weekly during bathing season and twice monthly outside this period (4320 samples/ year). Analysed at Wessex Water laboratories.
Equipment	Monitoring equipment (sondes / supporting monitors), telemetry equipment	£450k	£26k	Informed by costs incurred for Warleigh Weir investigation and quotes obtained to inform CWQM programme. Allows for one sonde per site with servicing, telemetry and installation costs.
Analysis	Academic support	£92k	£5k	Allowance for academic support via PhD or similar to process and interpret data, source apportionment etc.
Stakeholder	Liaison with stakeholders over requirements for monitoring	£65k	£4k	Allowance for engagement with local stakeholders
	Total	£8,393k	£494k	

Since the submission of our business plan in October 2023 three new inland bathing waters have been designated in the Wessex Water region at Fordingbridge, Farleigh Hungerford and French Weir. Through liaison with stakeholders, we had identified these locations as candidate sites for bathing water designation and included them within the up to 20 sites allowed for within our AMP8 Realtime water quality monitoring of amenity waters investigation (BW_INV5 driver). To deliver further stretch on cost efficiency, we have reduced the scope and cost of these investigations by around 15% and re-assigned this to the following new WINEP actions:

- 08WW102226a BW_INV2 ***Holding line for newly designated bathing water at River Avon at Fordingbridge***
- 08WW102233a BW_INV2 ***Holding line for newly designated bathing water at River Frome at Farleigh Hungerford***
- 08WW102230a BW_INV2 ***Holding line for newly designated bathing water at River Tone at French Weir Park***

Further information about how we have included newly designated bathing waters in our plan can be found in the document WSX-C09 - Enhancement costs - wastewater treatment.

4.4. Customer Protection

Significant concerns. We have significant concerns whether the company's proposal fully protects customers from non-or under delivery.

"The company has proposed a PCD for wastewater investigations, but this appears to only cover a small subset of drivers and excludes storm overflow EnvAct_INV4 investigations which make up a large proportion of this enhancement funding.

The expenditure in this area is material and, due to the scale of the investigation programme dominated by the statutory EnvAct_INV4 storm overflow actions due to be delivered by April 2027, we consider a PCD is required. We set a PCD for draft determination based on the number of investigations completed by the action delivery date. For more information on PCD decisions see the PR24 draft determinations: Expenditure allowances - Price control deliverable appendix."

We recognise that our originally submitted PCD for wastewater investigations excluded storm overflow EnvAct_INV4 investigations. At the time of submission, the number (and extent) of these investigations was still unclear, and as commented in Section 3.1.2, we still await final guidance from the Environment Agency on these investigations. To the extent that these are included, we consider the payment rates needs to be set appropriately to reflect the variability in type and nature of investigation. This is discussed in more detail in our separate representation WSX-O02 - Price Control Deliverables (section 3.3.2).

5. Why the change is in customers' interests

We strongly believe that adjusting our cost allowance to the level proposed in our business plan is in the interest of our customers. Our investigation programme has ensured that the best options for customers are implemented and has avoided unnecessary expenditure where our investigations have determined improving our assets would not realise the intended benefits. A cut in investment beyond our revised (lower) proposed allowance would:

- Curtail our ability to determine the most cost-effective environmental solutions for PR29;
- Risk the adoption of ineffective solutions to reduce Wessex Water's environmental impacts;
- Impact academic and stakeholder partnership work and efforts Wessex Water are taking to present itself as an innovative and environmentally conscious organisation; and
- Curtail our opportunities to innovate both for our customers and those within the wider industry.

Our Customer Research has indicated that 'Excellent river and coastal water quality' is a significant interest. Customers are increasingly aware, and therefore concerned, about the water quality of rivers and the sea. Environmental investigations collect data to inform future investment strategies, avoiding wasted expenditure, and increase the provision of data and understanding of our water quality, supporting customers' interests.

Annex 1 – Wessex Water's Warleigh Weir investigation winning Water Industry Award

Dan Byles, CCO • Jul 4, 2022 • 1 min read

Digitalisation Project of the Year Award 2022

The UK Water Industry Awards are in their sixteenth year, and they continue to celebrate frontline innovation and the incredible partnerships between water companies and their partners in the supply chain.

UnifAI Technology was Highly Commended last year for our ground-breaking project in Poole Harbour with Bournemouth, Christchurch and Poole Council, and together with our partners Wessex Water was shortlisted for two awards this year for our project at Warleigh Weir in the UK: *Real-Time Bacteria Monitoring and Alerts Using AI Powered Sensing.*

We are delighted to have won the highly coveted Digitalisation Project of the Year Award for our work with Wessex Water using our cutting edge artificial intelligence to help monitor and alert for harmful bacteria in rivers. This was a heavily contested field given the strong focus on innovation and digital transformation in the water sector at the moment. Winning this award was a huge achievement for the UnifAI Technology team and the Wessex Water project team.

The winners review said:

"Congratulations to Wessex Water and UnifAI on an innovative solution to a highly topical challenge. The judges said this project has great merit in its own right – and they were excited at its potential for application in other areas."

Annex 2 – Porlock Shellfish Water, supporting cost evidence

This annex has been fully redacted for public release.

Annex 3 – Amenity waters supporting cost evidence

This annex has been fully redacted for public release.

Annex 4 – Standard costing approach

Our AMP8 WINEP wastewater investigations have been bottom up costed using a standard template proforma, screen shots of which are provided below in Figures A4-1 and A4-2. This is to ensure that we have an auditable and consistent approach to costing our WINEP actions.

Where appropriate, we use consistent unit costs to cost our WINEP actions, with costs estimated using the number of units multiplied by the unit rate. The scale of the work required to deliver the investigation is informed by discussions with the environmental regulators over their expectations concerning the WINEP output and our own professional judgement and experience in delivering similar investigations in previous AMP cycles. This is the same approach that we used for costing our AMP7 programme.

This approach uses consistent unit costs for 'routine' elements of projects such as:

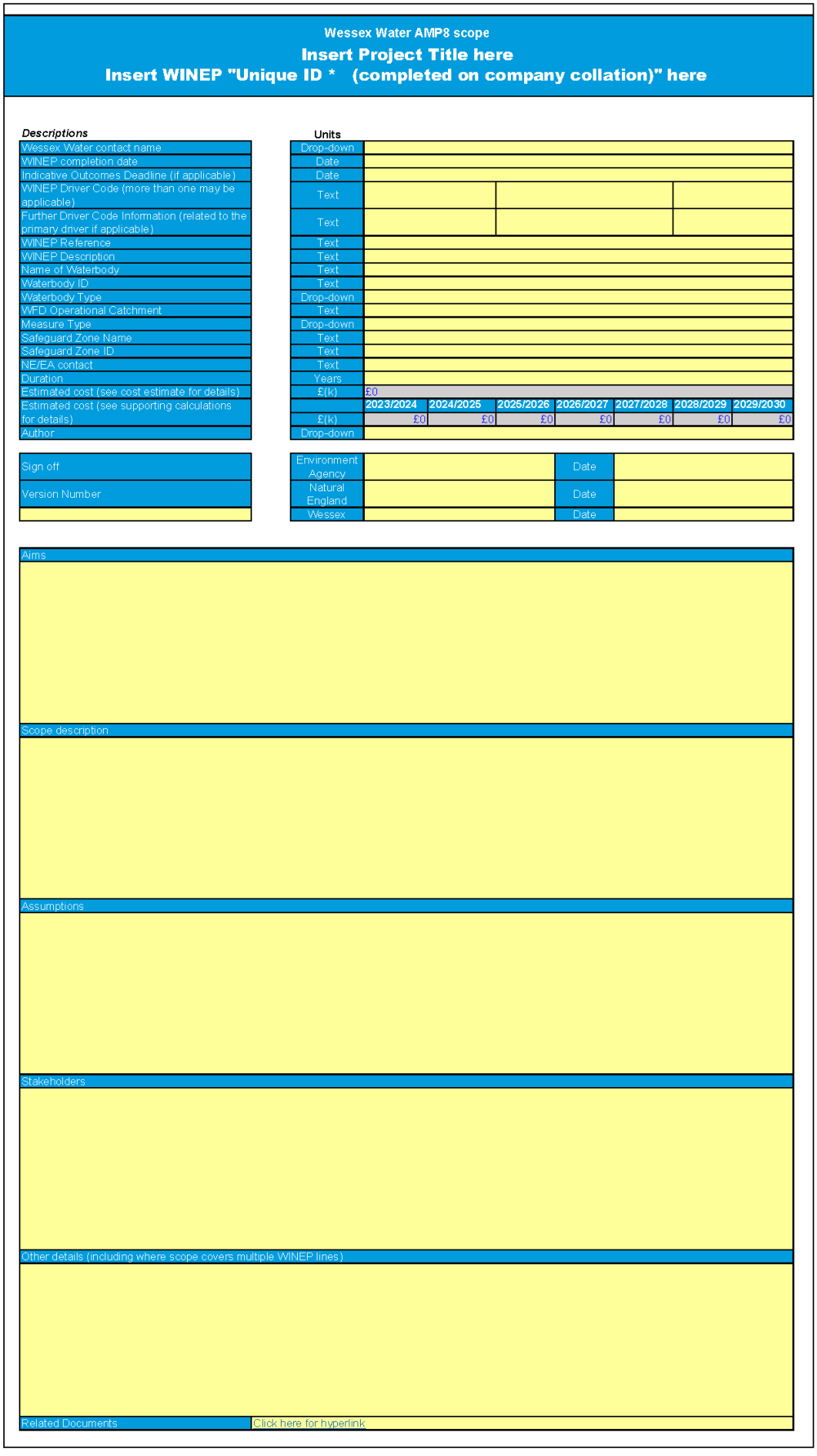
- Staff costs, using internal hourly cost recovery rates.
- Water quality analysis costs, based on internal costs from the Wessex Water Scientific Centre[2].
- Hydrological and ecological monitoring, based on rates being charged by our suppliers in the delivery of our AMP7 WINEP actions (river flow gauging, macroinvertebrate sample analysis etc).
- Monitoring equipment such as autosamplers, sondes and other water quality monitoring equipment, based on fees charged by our suppliers in the delivery of our AMP7 WINEP actions.
- Specific monitoring actions such as capturing spills from storm overflows. We used the cost incurred using contractors on an AMP7 investigation to develop unit rates (see Figure A4-3)
- Drilling observation boreholes, using unit cost rates in £/metre incurred during the delivery of our AMP7 WINEP actions and estimates of numbers of boreholes and their depth for AMP8 WINEP actions.

Not all activities required to deliver WINEP actions are suitable to the application of unit rates. For example, where modelling or monitoring is bespoke to a WINEP action and/or where we have not previously used an approach in delivering a WINEP Action. In these circumstances we have approached suppliers to obtain quotations or have used supplier quotes from delivering similar work in previous WINEP actions and scaling these up or down using professional judgement.

For example, we have four Transitional and Coastal Water Investigations in AMP8, each requiring extensive monitoring and coastal modelling (including development of new models) to deliver the requirements specified by Natural England. We do not have recent experience of developing large scale coastal models and met with a specialist coastal modelling consultancy during the development of our costing approach to obtain an estimate of requirements and costs. We have since tendered the preliminary stages of this work and responses from companies have been broadly aligned with the allowances included in our Business Plan submission.

[2] Note, the Wessex Water Scientific Centre is a commercial analytical lab providing similar services to external clients, including other water companies and Local Authorities, therefore costs quoted are benchmarked against market rate.

Figure A4-1 WINEP Scoping proforma (summary worksheet)



Wessex Water AMP8 scope

Insert Project Title here

Insert WINEP "Unique ID * (completed on company collation)" here

Descriptions	Units							
Wessex Water contact name	Drop-down							
WINEP completion date	Date							
Indicative Outcomes Deadline (if applicable)	Date							
WINEP Driver Code (more than one may be applicable)	Text							
Further Driver Code Information (related to the primary driver if applicable)	Text							
WINEP Reference	Text							
WINEP Description	Text							
Name of Waterbody	Text							
Waterbody ID	Text							
Waterbody Type	Drop-down							
WFD Operational Catchment	Text							
Measure Type	Drop-down							
Safeguard Zone Name	Text							
Safeguard Zone ID	Text							
NE/EA contact	Text							
Duration	Years							
Estimated cost (see cost estimate for details)	£(k)	£0						
Estimated cost (see supporting calculations for details)		2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030
	£(k)	£0	£0	£0	£0	£0	£0	£0
Author	Drop-down							

Sign off	Environment Agency		Date	
Version Number	Natural England		Date	
	Wessex		Date	

Aims
Scope description
Assumptions
Stakeholders
Other details (including where scope covers multiple WINEP lines)
Related Documents — Click here for hyperlink

Figure A4-2 WINEP Scoping proforma (costing worksheet)

Work Items	Unit	Rate	2023/2024	2024/2025	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	Total	Justification/comment
Staff time											
Senior Scientist	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Scientist	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
WECS Environmental Scientist	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Sampler	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Other	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Other	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Other	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Other	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Other	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
TOTAL (days)			0	0	0	0	0	0	0	0	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Consultant support											
Modelling	-									0.00	
Flow monitoring	£/day									0.00	
Ecological monitoring (terrestrial)										0.00	
Catchment management	-									0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Construction costs											
Gauging stations										0.00	
Boreholes										0.00	
Test pumping										0.00	
Pilot/ Trial										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Water quality analysis											
Water quality analysis (river suite)	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Specialist analysis (river + bacti)	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
TOTAL (number of samples)			0	0	0	0	0	0	0	0	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Ecological monitoring (aquatic)											
Invertebrates (family)	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Invertebrates (species)	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Macrophytes	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Diatoms	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Flow monitoring	Days/yr									0	
	£/day		0	0	0	0	0	0	0	0.00	
Zooplankton	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
Other	number of samples									0	
	£/per sample		0	0	0	0	0	0	0	0.00	
TOTAL (days)			0	0	0	0	0	0	0	0	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Monitoring equipment											
Trailer (New)	£/unit									0.00	
Trailer (Existing inc maintenance)	£/unit/yr									0.00	
Autosampler (standard)	£/unit									0.00	
Sonde (New)	£/unit									0.00	
Sonde (Existing inc maintenance)	£/unit/yr									0.00	
New Esnet telemetry	£/unit									0.00	
Timeview licence	£/unit/yr									0.00	
Meteor licence	£/unit/yr									0.00	
OBH logger	£/unit									0.00	
Other	£/unit/yr									0.00	
Other	£/unit/yr									0.00	
Other	£/unit/yr									0.00	
Other	£/unit/yr									0.00	
Other	£/unit/yr									0.00	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Stakeholder/ Third Party											
Academic (PhD/Masters etc)										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Communications/PR											
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Other											
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
Other										0.00	
TOTAL (£)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
GRAND TOTAL (£)			**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	

Figure A4-3 Example of AMP7 quotation for storm overflow monitoring (using event driven autosamplers) used to derive unit costs for AMP8 WINEP actions (supplier names redacted)

8. SCHEDULE OF RATES

We have provided a Schedules of Rates for Task 1 and a Schedule of Rates for Task2. Our offer is made on a fixed price remeasurable basis subject to contract. There are a number of the proposed contractual terms and conditions that we cannot accept as drafted and would wish to agree amendments. We have provided details of these within Appendix C.

8.1 Task 1

For Task 1 SoR, the items that are not considered to be remeasurable are items 1.1, 2.1 and 2.8.

Item	Description	Unit	Quantity	Rates (£)	Prices (£)	Comments
	Task 1: CSO and Storm Tank Monitoring					
1	**Project set-up & Site Inspection**					
1.1	Project Set-up, Site Inspection, RAMS and PEP	No.	1	5075.00	5075.00	
1.2	Meeting Attendance	No.	6	650.00	3900.00	
2	**Task 1: CSO and Storm Tank Monitoring**					
2.1	Installation of monitoring systems	No.	1	7640.00	7640.00	
2.2	Maintenance of CSO spill event monitoring system (5 sites per month)	Month	12	6380.00	76560.00	
2.3	Collection of Microbiological & Chemical samples (per event day 1)	No.	4	2185.00	8740.00	
2.4	Collection of Microbiological & Chemical samples (per event day 2)	No.	0	1500.00	0.00	
2.5	Delivery of Microbiological & Chemical samples to ALS Coventry (per delivery)	No.	4	350.00	1400.00	
2.6	System reset following abortive event	No.	0	670.00	0.00	
2.7	Maintainance of Met Station	Month	12	260.00	3120.00	
2.8	Removal of monitoring systems (5 No.) & Met Station	No.	1	2000.00	2000.00	
2.9	Data processing & reporting in spreadsheet format (per site per event)	No.	20	350.00	7000.00	
3	**Microbial Analysis**					event
3.1	E.Coli	No.	200	24.00	4800.00	
3.2	Enterococci	No.	200	24.00	4800.00	
3.3	F+ Coliphage	No.	0	38.45	0.00	
3.4		No.	0	0.00	0.00	
4	**Chemical Analysis**					
4.1	TSS	No.	200	4.77	954.00	
4.2	Total N	No.	200	3.58	716.00	
4.3	Total P	No.	200	1.05	210.00	
4.4	TON	No.	200	3.58	716.00	
4.5	Nitrite	No.	200	3.58	716.00	
4.6	Ammoniacal N	No.	200	3.58	716.00	
4.7	Orthophosphate	No.	200	3.58	716.00	
4.8	SRP	No.	200	3.58	716.00	
4.9	Alkalinity	No.	200	3.58	716.00	
4.10	Total Iron	No.	200	1.05	210.00	
4.11	Conductivity	No.	200	1.20	240.00	
4.13		No.	0	0.00	0.00	
5	**Optional Items**					
5.1		No.	0	0.00	0.00	
5.2		No.	0	0.00	0.00	
	Total of SoR (excluding optional items)				**131661.00**	

25

Annex 5 – Storm overflow flowchart

This annex has been fully redacted for public release.