

Representations: WINEP cost adjustment mechanism

Document Reference: J003a

This document contains U UW's proposal to enable a two-sided mechanism for the WINEP cost adjustment mechanism in order to minimise the potential risk resulting from the inclusion of a specific 'red' scheme within the final WINEP.

United Utilities Water Limited



Executive Summary

The Manchester Ship Canal between Salford Quays and Bollin Point replaced the natural river system when the Victorians constructed it. This means that the vast majority of Greater Manchester (population equivalent of over 3.5 million) now drains into a canal that leads to significant water quality issues, as there is very little water movement in dry summers resulting in very low concentrations of dissolved oxygen – a significant threat to fish.

In AMP4, we developed a strategy to meet the dissolved oxygen standards required by the Freshwater Fish Directive and latterly the Water Framework Directive in the Ship Canal. A key underpinning part of this strategy was a need to aerate the Manchester Ship Canal to enable it to perform more like a natural river system. This led to an innovative partnership trial of aeration in the Ship Canal turning basin area in AMP5 that proved successful and this area of water now supports a significant fish population and extensive waterside development.

Following the successful trial, we accepted an NEP requirement in AMP6 to contribute to a partnership trial to aerate a long section of the canal to Bollin Point. Extensive survey work has established the shape and form of the canal is very different to the turning basin where the trial took place, which means the original solution is not feasible due to significant conflicts with shipping and the bathymetry of the Ship Canal. We brought in an external consultant with significant expertise in aeration to review all potential alternative options that led to the conclusion that there were significant technical, practical and legal barriers to implementation of all potential solutions.

In June 2019, a workshop between United Utilities, Environment Agency (EA) and the Mersey Rivers Trust was held to explore these challenges. Following this workshop, a Joint Statement has been signed confirming, amongst other things, that aeration of the Ship Canal is not practically feasible. There is a need to develop an alternative strategy that needs to aim to get as far as technically feasible to complying with the dissolved oxygen standards.

The Environment Agency has made it clear that some AMP7 implementation of the alternative strategy is essential, as the River Basin Management Plan 2 requires the Ship Canal to improve from Poor to Moderate status for dissolved oxygen during AMP7.

Work is underway developing the alternative strategy, however, a significant amount of optioneering work has already been done which gives us good insight into the most significant discharges that are likely to require an upgrade. The three most significant discharges in terms of load are from Bolton, Davyhulme and Salford WWTW. In terms of intermittent discharges Bolton, Davyhulme and Bury WWTW storm tanks are of greatest significance. Bolton WWTW also requires significant improvements to meet Water Framework Directive requirements for the upstream River Irwell. There is a water quality problem caused by our final effluent discharge, however this scheme has previously been assessed as disproportionately expensive to resolve and so is currently red on the WINEP. However, this red assessment is without the dissolved oxygen benefits applied, as these are assumed as delivered in the cost

J003a – WINEP cost adjustment mechanism

benefit assessment. Furthermore, the disproportionate cost test does not apply to the dissolved oxygen issue, as the Ship Canal is a protected area for cyprinid fish, thus this scheme is very likely to turn green on our WINEP for delivery in AMP7.

Therefore, there is a significant probability that the EA will conclude (following its acceptance that aeration is no longer a feasible solution to resolve the dissolved oxygen issue in the Ship Canal) that work is required at Bolton when they review the revised strategy for the Ship Canal before March 2020.

We believe that this would also represent the best option for customers as it contributes to the unfulfilled AMP6 obligation and it is expected to be deliverable in AMP7. It is therefore likely to be the identified scheme at Bolton WwTW (to improve the final effluent and storm tank discharges) in line with the following (currently) red WINEP drivers.

- WINEP ID 7UU300118 - 15mg/l BOD (95%ile) (current permit 20mg/l)
- WINEP ID 7UU200790- 2mg/l ammonia (95%ile) (current permit 6mg/l)
- WINEP ID 7UU200730 - 0.4mg/l Phosphorus (annual average) (current permit 1mg/l)
- WINEP ID 7UU200790 – WFD 99%ile intermittent standards for Dissolved Oxygen and Ammonia for Bolton WwTW storm tank discharges

We have already developed a solution for this WwTW as part of our PR19 process and it has an estimated cost of £78.3m in AMP7.

The other major discharges into the Ship Canal at Davyhulme and Salford WwTWs have been considered as part of the alternative strategy. However, as the certainty of these schemes is less established and there are a number of other uncertain factors (population growth and priority substances), we expect that it will be necessary to investigate these further during AMP7, and so any requirements at these works will not be required until AMP8. Therefore, we consider that Bolton is the best option for customers for delivery in AMP7.

In order to ensure we can make progress on an alternative strategy in AMP7 we are proposing to include the “red certainty” WINEP scheme for Bolton WwTW as a specified limited two-sided component of our AMP7 WINEP uncertainty mechanism. We have not included this within our submitted business plan and so customers are protected in the event that there is no requirement to improve dissolved oxygen the Ship Canal in AMP7 (i.e. that work is deferred until AMP8).

In Section 9 we set out our proposals for how the cost adjustment mechanism should reflect this likely new WINEP requirement.

Below, we set out the justification for the Bolton WwTW scheme, using Ofwat’s standard structure for enhancement cost claims.

Cost Adjustment Summary Form

	Brief summary of evidence to support enhancement requirements
Need for investment/ expenditure	<p>Our base cost only covers the cost of meeting current Environmental Permit requirements. The expenditure covered by this document is to meet needs that are not currently in our business plan but are highly likely to become green certainty WINEP drivers requiring delivery in AMP7.</p> <p>This change is forecast to occur because we have recently reached agreement with the Environment Agency that it is not practically feasible to aerate the Manchester Ship Canal. This means there is a need to revise the strategy to address the dissolved oxygen issues in this water body (see Appendix 1: Joint Statement on Manchester Ship Canal Strategy). This agreement comes after a number of years of seeking the optimal solution to the issue.</p> <p>The Environment Agency’s AMP6 National Environment Programme requires United Utilities to “complete the UU contribution to water body aeration” of the Manchester Ship Canal from Salford Quays to Bollin Point (17.8km). This is driven by the 2003 Fresh Water Fish Designation minimum standards for dissolved oxygen in Cyprinid Waters of 4mg/l.</p> <p>During PR14 development a solution was identified that considered use of mechanical aeration along the impacted length of canal using air driven Helixors to provide destratification and to increase oxygen levels.</p> <p>As the scheme developed through detailed design and technical feasibility a number of constraints emerged that led UUW to consider provision of aeration along the Manchester Ship Canal from Salford Quays to Bollin Point to be practically infeasible. We have confirmed the technical infeasibility of aeration and have engaged extensively with the Environment Agency. This phase concluded that constraints associated with all aeration options considered (including Helixors) could not meet the AMP6 National Environment Plan driver and required water quality outcomes. In discussion with the Environment Agency this was agreed via the joint statement, signed June in 2019.</p> <p>Principal constraints from the technical feasibility assessment that will not allow the 4mg/l DO standard to be met through available aeration technologies considered are below:</p> <ul style="list-style-type: none"> • Lack of available space and depth outside the navigable channel to allow for appropriate and effective locating of required aerators • Risk of shipping/dredging and impact of flooding damaging aerators and ancillary equipment or Manchester Ship Canal Company Ltd. moving equipment as part of discharging their statutory duties • Potential for increasing risk of bank instability on 3rd party land and potential impact of land loss to canal due to construction/additional currents <p>The Environment Agency has now (on 21 June 2019) signed a joint statement, along with the Mersey Rivers Trust and UUW, which confirms that the previous aeration strategy is not practically feasible. However, the statutory need for improvement to meet Fresh Water Fish standards (now defined as part of the Water Framework Directive) remains. As such, we have been committed to working to identify an appropriate, alternative approach to deliver these statutory requirements.</p> <p>On the understanding, and agreement, that providing direct aeration to the Canal is impractical United Utilities, in partnership with the Environment Agency and Mersey Rivers Trust, have led on developing proposals for an alternative catchment based strategy for improving the environmental quality of the Manchester Ship Canal in the longer term.</p>

	<p>The catchment based strategy for the Manchester Ship Canal is highly likely to lead to the need to improve some of UUW’s significant discharges that go either directly or indirectly to the Manchester Ship Canal, with the Environment Agency having already confirmed that this approach will lead to a need for some investment in AMP7.</p> <p>Extensive river quality modelling undertaken by UUW during summer 2019 has identified an AMP7 scheme at Bolton WwTW as the most likely alternative intervention in AMP7. Bolton WwTW is the largest upstream wastewater treatment works of the Manchester Ship Canal, discharging to the River Irwell, with its final effluent contributing the highest ammonia load to the Ship Canal of all UU’s WwTWs; 21.8% of the load in the canal. It also contributes 5.9% of Biological Oxygen Demand (BOD) load to the canal, which makes it the 3rd most significant WwTW for BOD. Finally, Bolton WwTW storm tanks also have a high spill frequency, contributing to the second highest load to the Ship Canal of all overflows. The lack of aeration in the canal means that the current final effluent performance and frequently spilling storm tank overflow is also causing a significant impact on dissolved oxygen in the Ship Canal.</p> <p>The modelling carried out in 2019 indicates that the proposed improvements at Bolton WwTW will improve the river quality of the receiving River Irwell (to standards required by AMP7 WINEP3 currently ‘red category’ driver designations) but also improve water quality in the downstream Manchester Ship Canal, providing a demonstrable step towards meeting required Fresh Water Fish dissolved oxygen standards as part of a long term catchment based strategy. With the added benefits from the Ship Canal associated with the Bolton project we fully expect the driver to turn red to green.</p> <p>The current AMP7 WINEP WFD Drivers relating to Bolton WwTW considered to be “red certainty” are detailed below:</p> <ul style="list-style-type: none"> • WINEP ID 7UU300118 - 15mg/l BOD (95%ile) (current permit 20mg/l) • WINEP ID 7UU200790- 2mg/l ammonia (95%ile) (current permit 6mg/l) • WINEP ID 7UU200730 - 0.4mg/l Phosphorus (annual average) (current permit 1mg/l) • WINEP ID 7UU200790 – WFD 99%ile intermittent standards for Dissolved Oxygen and Ammonia for Bolton WwTW storm tank discharges
<p>Outside management control</p>	<p>Following a successful trial to aerate part of the canal in AMP5 we accepted an AMP6 driver to contribute to aeration of the rest of the canal to Bollin Point. This was originally required by March 2017 but once detailed investigations were carried out in AMP6 and the technical issues were identified with the original solution, we reached agreement to delay the regulatory date to March 2020 in order to explore further avenues for aeration. We have continued to work extensively with the Environment Agency and partners from the catchment to explore alternatives and to explain in detail the technical feasibility challenges, which are outside of management control as issues centre on ensuring the canal remain navigable.</p> <p>We appointed external consultants with expertise in aeration to review all feasible options to aerate the canal in light of the new information we obtained on the shape and form of the canal. This work was reviewed by the Environment Agency and ultimately led to a Joint Statement being signed by UU, EA and the Mersey Rivers Trust following a workshop in June 2019 which confirmed that it was not practically feasible to aerate the canal.</p> <p>In the absence of aeration there is a need to find another way to meet the dissolved oxygen standards to increase the chances of fish surviving and thriving in the Ship Canal. We are developing an alternative strategy in partnership with the Environment Agency and the Mersey Rivers Trust to ensure it is based on the best available information and considers the widest possible options.</p>
<p>Best option for customers</p>	<p>Through our diligent investigations into the feasibility of aeration of the canal we have avoided significant investment that would have ultimately lead to an ineffective (and hence inefficient)</p>

	<p>solution. This has prevented £11.5m of ineffective spend in AMP6, the benefit of which will be shared with customers.</p> <p>As we have an unfulfilled obligation it is important that we start work on an alternative strategy to address the dissolved oxygen issue in the Ship Canal as soon as possible as it will continue to fail statutory WFD standards and continue to be significant barrier to fish migration into the upper reaches of the Mersey Basin, including the catchment which serves a significant portion of the Greater Manchester Area.</p> <p>In 2019 detailed modelling was carried out by UUW, which has been reviewed and validated by the Environment Agency. Modelling indicates that our most significant discharges (Bolton, Davyhulme and Salford) in the Irwell and the Ship Canal are very likely to play a key role in future WFD strategy. Potential interventions at both Davyhulme and Salford would lead to improvements in the Ship Canal, however we do not consider them to viable for implementation in AMP7 as there is on-going investigatory work required for potential priority substances limits in AMP8. Furthermore, they are likely to require further work to prevent deterioration in the Ship Canal due to population growth. Bolton WwTW on the other hand has clear drivers without significant future risks and it has a fully developed solution leaving it as the alternative scheme for the outstanding AMP6 obligation that can be delivered in AMP7.</p>
<p>Robustness and efficiency of costs</p>	<p>The estimated cost to address the red WINEP drivers for Bolton WwTW has been developed in the same way as those for our PR19 submission. The approach taken is therefore set out in Chapter 7 of our PR19 business plan, and includes:</p> <ul style="list-style-type: none"> • Embracing the totex and outcomes approach, delivering significant improvements from innovative approaches and technologies; • Use of our Market Engagement Methodology (MEM), we have improved the sophistication with which we engage with markets to deliver more efficient solutions and services; and • Improving our approach to totex, by better challenging both needs and solutions. <p>The introduction of a risk and value (R&V) assessment across all our major projects has supported better challenge of our expenditure requirements, including enhancements. This ensures that when we decide projects are necessary, we only do what we need to do, that our decisions are based on strong evidence, and the value to both the environment and customers is clear. The process ensures that we keep challenging and validating both the need for our projects and the way we deliver them.</p> <p>Options for Bolton WwTW were developed, tested and discounted through the PR19 process and this is included in the body of this document.</p> <p>In addition to following our assured PR19 process for scoping and costing the scheme for Bolton WwTW we have tested the scope of the preferred option in detail as part of process in working together with the Environment Agency and Mersey Rivers Trust. This involved investigating the options and testing the preferred option with UU Engineering discipline leads to ensure the approach and scope was robust.</p>
<p>Customer protection</p>	<p>Ideally, it would be preferable for the EA to clarify the status of this scheme in time for it to be included within the Final Determination. Given that may not be possible, we propose to include a limited two-sided component to our WINEP cost adjustment mechanism, restricted to this environmental outcome for the Manchester Ship Canal alone (i.e. not a general two-sided mechanism, as we had previously sought). This protects customers in that they will only pay in the event that EA confirm the scheme as green certainty in our WINEP, as we expect. If it is not triggered (i.e. in the unlikely event that the EA do not require further work to be undertaken), customers are no worse off.</p> <p>We propose to protect customers by using a limited two-sided component within the WINEP uncertainty mechanism, such that costs will only be passed onto customers in the event that the requirements are confirmed as “green” in 2021.</p>

	<p>We also propose to further protect customers by only reflecting our expectation that the cost of these schemes is less than that implied by the current WINEP mechanism rates, and lower than that predicted by Ofwat’s cost models for that scheme:</p> <ul style="list-style-type: none"> • Ofwat’s WINEP cost assessment model estimates a predicted cost of £115m; • Our WINEP cost adjustment mechanism (albeit that mechanism is “one-way”) unit rates imply a value of £96m (based on the rates for phosphorus removal and storage only as there are no unit rates for sanitary parameters or increasing flow to full treatment); and • Our internal cost estimate for the scheme, puts the cost at £78.3m <p>We will propose a cost adjustment rate such that the two sided mechanism value is limited by the predicted cost of the scheme, and not the (higher) unit rate that is in the current WINEP mechanism.</p>
<p>Affordability</p>	<p>Through research customers have shown a strong preference to protect the environment from deterioration and 55% surveyed also support improvements in service to enhance river quality, one of the highest of any service area in our choice experiment (PR19 Chapter 5, Great Service to Customer - UUW105). Also, over 80% of customers supported our overall proposed package of service improvements and bills.</p>
<p>Board assurance</p>	<p>The proposed scheme at Bolton WwTW is fully scoped and costed in the same way as schemes included in the enhancement supplementary documents within our United Utilities business plan 2020-2025, and therefore we consider that it confers an equivalent level of assurance to our September 2018 business plan.</p>

1 Introduction

This document sets out the background to why additional WINEP enhancement requirements relating to the Manchester Ship Canal are highly likely to arise for United Utilities in AMP7. It also covers why these requirements are outside of management control, our approach to solution development and how we have ensured that costs are robust.

2 Background

When the Manchester Ship Canal was constructed in 1894, it replaced some of the natural river system. This has resulted in effluent from a population equivalent of over 3.5 million in Greater Manchester draining into the Ship Canal catchment alongside storm sewage discharges. During the summer months, flows are often low and water is held back in the canal to ensure there is sufficient water for ship navigation. This held and slow moving water leads to a risk of low concentrations of dissolved oxygen – a significant threat to fish survival.

In December 2003, the Manchester Ship Canal was designated under the Freshwater Fish Directive, which meant that water quality standards, including those for dissolved oxygen needed to be met by December 2008. It was recognised that this was not straightforward for the Ship Canal, as it would behave very differently to a natural river. As a result, in AMP4 we successfully built a three dimensional model of the canal to determine what needed to be done to meet the standards. This demonstrated that full compliance with the standards was not possible without artificially aerating the canal alongside improvements to some of our discharges. At this point, aeration of the canal became part of the strategy.

In AMP5, we had a National Environment Plan requirement to contribute to a trial of aeration in the Ship Canal. Match funding for the scheme from the North West Development Agency did not arise following the disbanding of the Regional Development Agencies. It was then agreed with Healthy Waterways Trust to focus immediate efforts on the Ship Canal turning basin area due to the high amenity value of this area and the need to replace the existing oxygenation equipment. Salford City Council contributed in kind by project managing the trial with UUU paying for the equipment and installation costs. This trial was successful and the turning basin area of the canal now supports significant numbers of fish. The turning basin area continues to be a major focus of development for Greater Manchester with the BBC, ITV and Lowry Theatre as well as water front development on the back of the benefits delivered. We continue to support the operational costs so that this trial kit continues to benefit the environment.

This successful trial gave confidence at the time that aeration at a larger scale was a feasible option.

Figure 1 Area draining through the Manchester Ship Canal

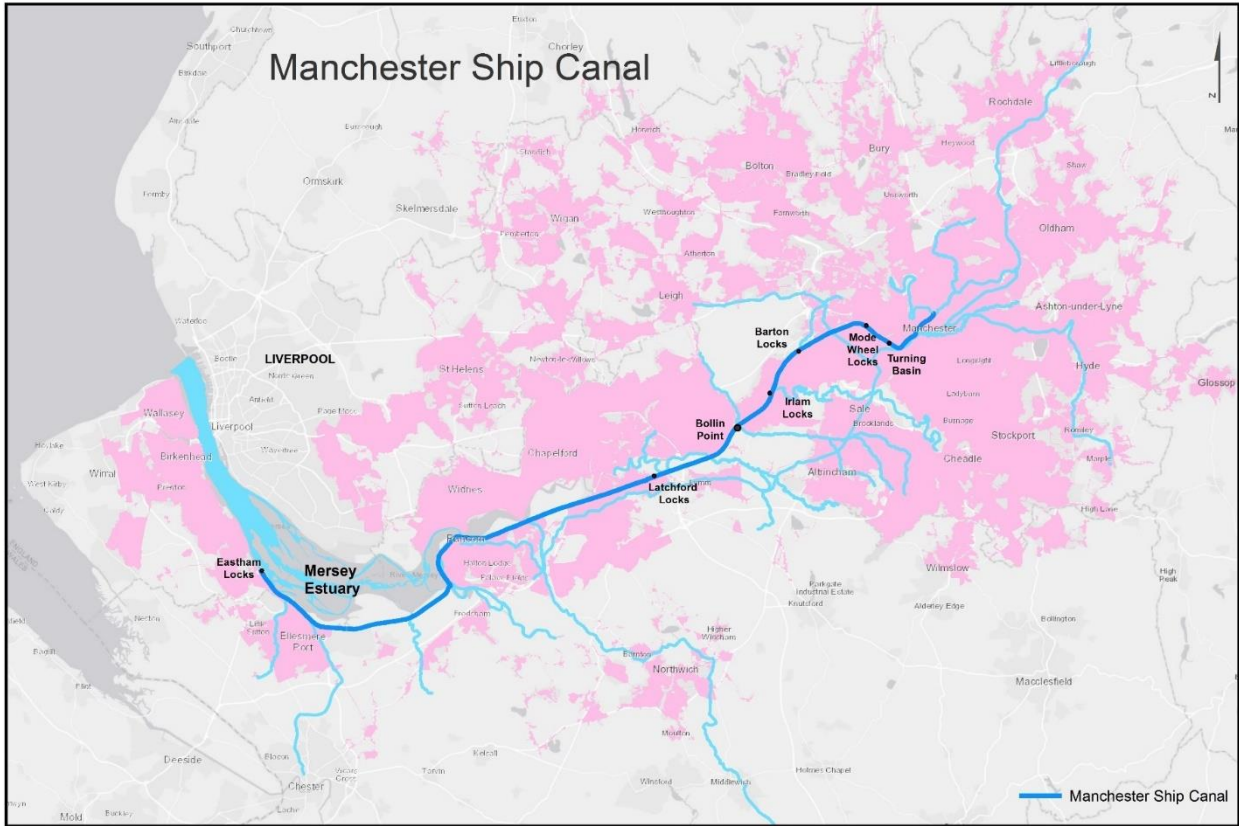
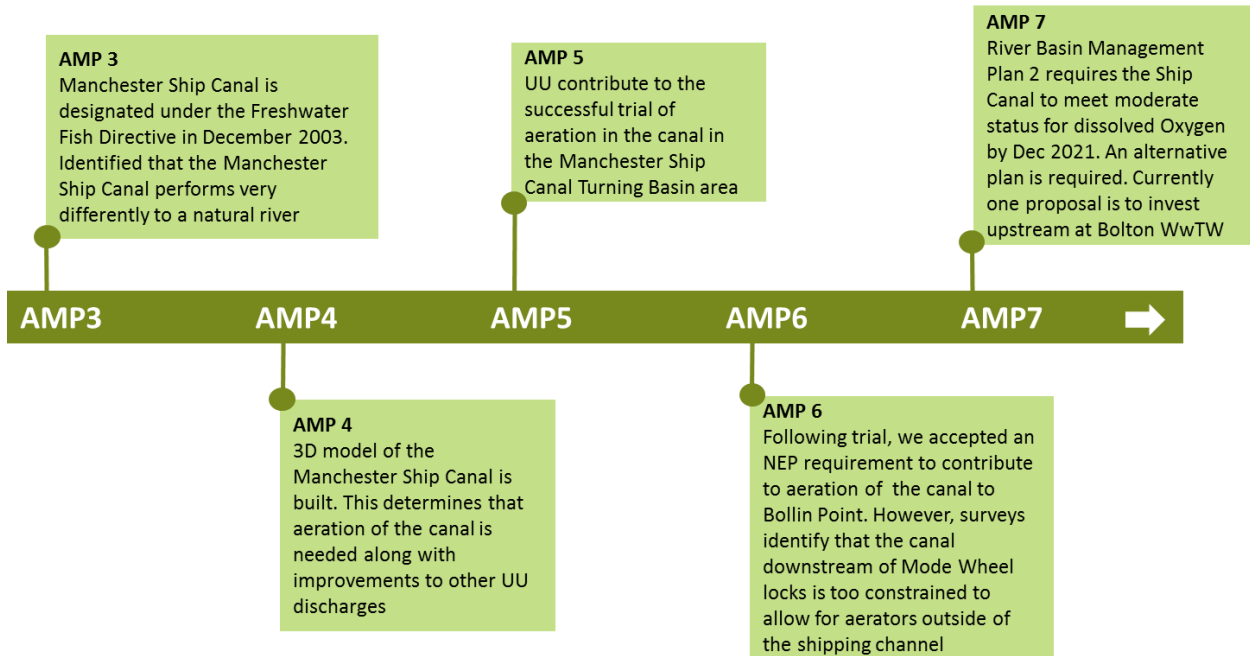


Figure 2 History of the Manchester Ship Canal strategy, which continues to evolve in conjunction with the Environment Agency and Mersey Rivers Trust



Based on the successful trial, we accepted an AMP6 National Environment Plan requirement to contribute to aeration of a significant stretch of the canal to Bollin Point. Once detailed investigations were carried out in AMP6, and the potential for technical issues were identified with the original solution, we reached agreement to delay the regulatory date to March 2020 in order to conduct more thorough investigations into the feasibility of the aeration project. We

J003a – WINEP cost adjustment mechanism

undertook a survey of the Ship Canal and identified that the canal downstream of the turning basin area is too constrained to allow the proposed aerators to be installed outside the shipping channel, as it is a different shape to the section of the canal we successfully aerated. We also undertook an extensive review of alternative aeration solutions that would meet the dissolved oxygen standards without the conflicts of the original solution. This led to the conclusion that there was nothing available that could meet the original outcome target of the project. On 21 June 2019, we held a workshop with the Environment Agency and Mersey Rivers Trust to review and confirm the evidence, and explore the way forward in light of the issues. This led to a signed joint statement which agreed that aeration was not practically feasible and an alternative strategy was required (see Appendix 1: Joint Statement on Manchester Ship Canal Strategy).

We limited expenditure in AMP6 to survey costs and exploration of alternative approaches to aeration, resulting in only £560k of the original project cost. This avoided £11.5m of AMP6 costs, the benefit of which will be shared with customers. We have also recognised, in our AMP6 reconciliation submission, that the aeration scheme will not be delivered, resulting in a loss of accumulated ODI rewards of £180k.

We are now working with the Environment Agency to identify an alternative approach to address the long-term water quality issues that exist in the Ship Canal, which includes the dissolved oxygen problem. Whilst work is ongoing to identify the overall strategy, it is likely that it will result in some of our “red certainty” WINEP requirements turning to “green certainty”. This is because achieving the dissolved oxygen standards is a statutory driver without a cost benefit test.

3 Need for investment

The need for investment comes from an unfulfilled AMP6 obligation following agreement by the EA that aeration is not practically feasible, as described above. While investigations and work continues with the Environment Agency, we have had clear indications that intervention in AMP7 will be required.

The need to invest to achieve either new or tighter permit limits in AMP7 is driven by the Water Framework Directive. In this case, the key issue is addressing the dissolved oxygen concentrations in the Ship Canal that was identified when it was designated in 2003 under the original Freshwater Fish Directive as a cyprinid fishery. The Freshwater Fish Directive has been subsumed into modern regulation in the form of the Water Framework Directive. As this is a designated waterbody, protected area under the Water Framework Directive, interventions are not subject to the disproportionate cost test.

There are a number of other schemes in the catchment that are all currently classed as “red certainty” because there is clear evidence of a water quality impact linked to our discharge (Appendix 2, Table 7) but they were considered as disproportionately expensive under Water Framework Directive. As this does not apply in this case due to the protected area designation of the canal, some of these schemes will turn to “green certainty” when finally signed off by the Environment Agency and Defra in 2020.

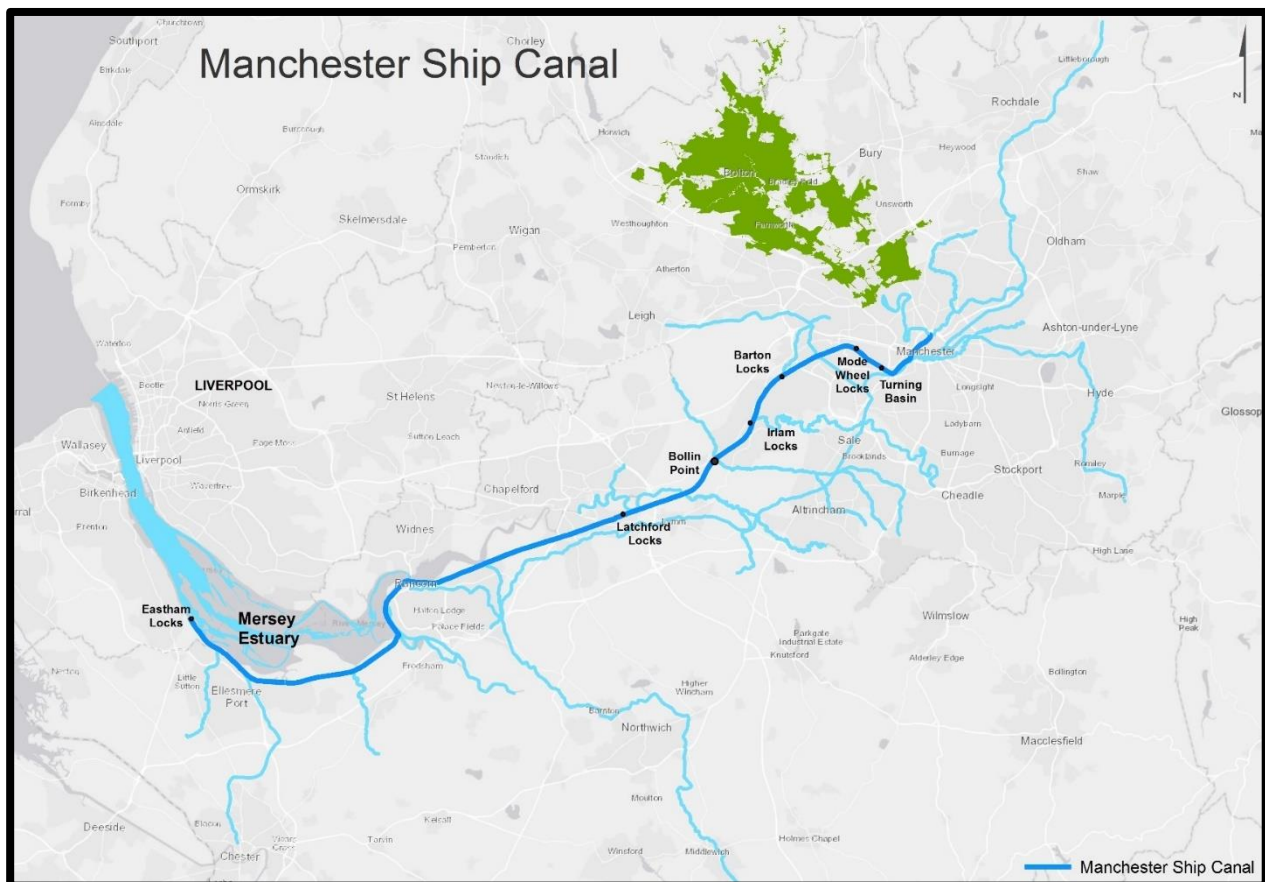
The previous scheme at Bolton was red, assuming a defined scope and that aeration of the Ship Canal had been fully implemented. Now that the aeration strategy has been agreed to be

J003a – WINEP cost adjustment mechanism

practically infeasible, the dissolved oxygen benefits can be applied to the Bolton scheme making it highly likely to become green within WINEP.

Bolton WwTW is our largest WwTW upstream of the Manchester Ship Canal and final effluent contributes the highest ammonia load to the Ship Canal of all our WwTW at 21.8%. It also contributes 5.9% of Biological Oxygen Demand, which makes it the third most significant WwTW for Biological Oxygen Demand. It is therefore the most feasible option for improvements to the Manchester Ship Canal. Bolton WwTW storm tanks also have a high spill frequency, contribute the second highest load to the Ship Canal of all overflows and have been demonstrated through river quality modelling to be a key contributor to the River Irwell not meeting Water Framework Directive. The lack of aeration in the canal means this frequently spilling overflow is also causing a significant impact on dissolved oxygen in the Ship Canal.

Figure 3 Area draining through Bolton WwTW, upstream of the Ship Canal



3.1 AMP7 enhancement expenditure

Our cost estimate for the most likely scenario at Bolton to start to deliver the Manchester Ship Canal strategy in AMP7 is a totex of £78.3m.

Bolton WwTW is our largest treatment works upstream of the Ship Canal and will serve a forecast population equivalent of 395,690 by 2025. The project scope for Bolton WwTW, as part of a long-term catchment based strategy is as follows:

- Upgrade the Activated Sludge Plant (ASP) to Fine Bubble Diffused Aeration (FBDA) (Benefits - BOD reduced to the required low standard and Ammonia reduction)

J003a – WINEP cost adjustment mechanism

- Installation of ferric dosing and installation of Mecana filtration process (Benefits - Phosphorus removal)
- Increase the flow to full treatment (FTFT) by c.50MI/d to reduce storm discharges in addition to provision of additional storm storage (Benefits - reduced BOD, Phosphorus and Ammonia load from reduced spill frequency)

The scale of work required to address the impact of the storm tank discharges means that it is necessary to both significantly increase the flow sent to full treatment by 50MI/d and build an additional 63,500m³ of storm tank storage. This is required in order to ensure that settled storm effluent is able to be returned to the treatment process as soon as practicable and in the most efficient way. Increasing treatment capacity also mitigates the risk of storm water turning septic and ensures that there is sufficient capacity in the treatment process to allow for settled storm effluent returns.

Table 1 indicates the expected AMP7 costs for the scheme. This expenditure covers the enhancement costs associated with meeting the WINEP (red) requirements for Bolton WwTW by the end of AMP7.

Table 1 Estimated capex cost of meeting the red certainty WINEP drivers for Bolton

Revised permit requirements	Capex cost £m
Phosphorus 0.4mg/l Ammonia 2mg/l, BOD 15mg/l Increase in FTFT by 50MI/d	36.5
Increase in storm storage by 63,500m ³	41.8
Total	78.3

Water quality modelling scenarios undertaken have forecast that the proposed improvements at Bolton WwTW will improve water quality in the downstream Manchester Ship Canal and move water quality towards required dissolved oxygen standards as part of a long-term catchment strategy.

4 Management Control

The Environment Agency has now signed a joint statement, along with the Mersey Rivers Trust and United Utilities (following a workshop on 21st June 2019), which confirms that the previous aeration strategy will not be feasible in resolving the environmental requirement. However, the statutory need for improvement to meet Fresh Water Fish standards (now defined as part of the Water Framework Directive) remains. As such, United Utilities has committed to working to identify an appropriate, alternative approach to deliver these statutory requirements.

We have worked closely with the Environment Agency to confirm that the option of aerating the Ship Canal is not practically feasible and we are now using our three dimensional water quality model of the Manchester Ship Canal to derive the optimum solution to address the dissolved oxygen issue. Whilst doing this, we are carefully focusing to avoid drawing in schemes, which are not going to make a significant contribution to meeting this objective.

J003a – WINEP cost adjustment mechanism

Where interventions need more planning because of interaction with other requirements and considering the dynamic growth of the catchment, we will work with the Environment Agency to understand potential requirements for delivery in AMP8 so that the optimum solution across the system can be delivered for customers.

5 Best option for customers

Following agreement that providing direct aeration to the Canal is impractical, U UW is working in partnership with the Environment Agency and Mersey Rivers Trust to develop proposals for an alternative catchment based strategy for improving the environmental quality of the Manchester Ship Canal. The catchment-based strategy for the Manchester Ship Canal is likely to lead to the need to improve some of U UW's significant discharges that go directly or indirectly to the Canal. The Environment Agency has already confirmed that the strategy will lead to a need for some investment in AMP7.

Extensive river quality modelling undertaken by U UW over the summer of 2019 has identified the AMP7 scheme at Bolton WwTW as one of the most beneficial U UW asset based solutions in moving towards the Manchester Ship Canal's dissolved oxygen requirements. Bolton WwTW is the largest upstream wastewater treatment works of the Manchester Ship Canal, discharging to the River Irwell, with its final effluent contributing the highest ammonia load to the Ship Canal of all U UW's WwTWs at 21.8%. It also contributes 5.9% of Biological Oxygen Demand, which makes it the third most significant WwTW for BOD. Finally, Bolton WwTW storm tanks also have a high spill frequency, contributing to the second highest load to the Ship Canal of all overflows and have been demonstrated through river quality modelling to be a key contributor to the River Irwell not meeting Water Framework Directive. The lack of mixing in the canal means that the current final effluent performance and frequently spilling storm tank overflow is also causing a significant impact on dissolved oxygen in the Ship Canal.

River quality modelling scenarios completed in 2019 refined a catchment based strategy and confirmed that the proposed improvements at Bolton WwTW will improve the river quality of the receiving River Irwell (to standards required by AMP7 WINEP3 'red category' driver designations). It will also improve water quality in the downstream Manchester Ship Canal, providing a demonstrable step towards meeting required dissolved oxygen standards as part of a long-term catchment based strategy.

It is possible the Environment Agency will seek other schemes to be delivered in AMP7 and improvements at Davyhulme and Salford WwTW may be seen as other candidates. However, these are key strategic assets, which are likely to have multiple investment drivers and with such a dynamic catchment (serving Manchester and Salford, which are some of the fastest growing areas in Europe). As a result, these sites will require further investigations over AMP7, and therefore are unlikely to require investment until AMP8. We believe that proposed improvements at Bolton WwTW would deliver significant benefits to the Ship Canal as well as improving the River Irwell making it the likely scheme for AMP7.

We have previously undertaken a significant exercise to identify the most cost effective way of meeting the future permit requirements for Bolton WwTW as it has a need for a significantly tighter permit under Water Framework Directive for water quality needs in the River Irwell.

J003a – WINEP cost adjustment mechanism

When assessing the options for Bolton WwTW, the following generic high-level solutions were considered:

- Do nothing
- Operations and Maintenance
- Optimise Asset
- Partnership/catchment solution
- Refurbish asset
- New asset

In the case of Bolton WwTW, the requirements represent a significant change to the permit and therefore new and upgraded assets would be required. As the treatment works is a dominant source of load, a catchment solution is not viable. Table 2 below summarises the optioneering assessment undertaken.

6 Robustness and efficiency of costs

We have scoped and estimated the solution for Bolton WwTW using the same process as approved WINEP schemes within our submitted PR19 Business Plan, even though the scheme did not make our submitted plan. As set out in Chapter 7 of our PR19 business plan, we have undertaken significant improvements in our delivery of efficient totex solutions:

- We have embraced the totex and outcomes approach, delivering significant improvements from innovative approaches and technologies;
- Through our Market Engagement Methodology (MEM), we have improved the sophistication with which we engage with markets to deliver more efficient solutions and services; and
- We have improved our approach to totex, by better challenging both needs and solutions.

The introduction of a risk and value (R&V) assessment across all our major projects has supported better challenge of our expenditure requirements, including enhancements. This ensures that when we decide projects are necessary, we only do what we need to do, that our decisions are based on strong evidence, and the value of both business and customers is clear. The process ensures that we keep challenging and validating both the need for our projects and the way we deliver them. Table 2 below summarises the feasible options for Bolton WwTW that were developed and tested.

J003a – WINEP cost adjustment mechanism

Table 2 Summary of optioneering assessment for Bolton WwTW

Option	Description	Reason for choice
1	<ul style="list-style-type: none"> Upgrade (refurbish) existing activated sludge plant (ASP) and retrofit new surface aerators. Ferric dosing and Mecana pile cloth filter for Phosphorus removal. Additional storm storage without increasing flow to full treatment (FTFT) 	<p>Discounted</p> <ul style="list-style-type: none"> In this instance, surface aerators are deemed inefficient in terms of opex, asset performance and control when compared to alternative of FBDA. Existing WwTW process does not have capacity for emptying the additional storm tank storage. Increase in flow to full treatment (FTFT) required to allow for storm storage returns. Inadequate land availability for unrestricted storm storage provision.
2	<ul style="list-style-type: none"> Upgrade (refurbish) activated sludge plant (ASP) to Fine Bubble Diffuse Aeration (FBDA). Ferric dosing and Mecana pile cloth filter for Phosphorus removal. Additional storm storage without increasing flow to full treatment (FTFT) 	<p>Discounted</p> <ul style="list-style-type: none"> Existing process does not have capacity for emptying of additional storage. Increase in flow to full treatment (FTFT) required to allow for storm storage returns. Inadequate land availability for unrestricted storm storage provision.
3	<ul style="list-style-type: none"> Upgrade (refurbish) activated sludge plant (ASP) and retrofit with Fine Bubble Diffuse Aeration (FBDA). Ferric dosing and Mecana pile cloth filter. Increase in FTFT by 50,000m³/d (575l/s) and additional 63,500m³ additional storm storage provision to meet WFD 99thile Ammonia and DO intermittent standards in the River Irwell, upstream of and also impacting the Manchester Ship Canal. 	<p>Preferred Option</p> <ul style="list-style-type: none"> When compared to alternative of surface aerators FBDA allows for better air mixing across the treatment process and increased opportunity for enhanced control allowing for more efficient opex and asset performance. Storm storage provision balanced with increase in FTFT fits with land availability. Meets WFD environmental standards

In addition to following the assured PR19 process for developing scope and costs, we have subsequently carried out further tests of the scheme developed for Bolton WwTW.

UU Engineering disciplines (Civil, Mechanical and Process Engineering) have reviewed the solution proposals over the summer of 2019 to support the joint working group that includes the Environment Agency and Mersey Rivers Trust. Following development and agreement of the Joint Statement indicating that aeration was practically infeasible, the solution was reviewed again. This recent UU Engineering discipline review concluded that solution with the associated risks and opportunities provide a robust level of certainty comparable to the other projects submitted as part of UU's PR19 Business Plan.

Ofwat's assessment of wastewater WINEP costs in the round for the slow track Draft Determinations (DD) illustrates that our proposed business plan costs are more efficient than the baseline (once the calculation error highlighted within 'J003 – Cost assessment' is

J003a – WINEP cost adjustment mechanism

corrected). Furthermore, if we estimated the project through Ofwat’s slow track DD enhancement models, this would result in a significantly higher allowance (see Table 3 below) than we are proposing through this adjustment. Having used the same approach and cost information to estimate the required expenditure for this scheme, Ofwat should have confidence that the costs proposed are equally efficient.

7 Customers are protected

Ideally, it would be preferable for the Environment Agency to clarify the status of this scheme in time for it to be included within the Final Determination. Given that may not be possible, we propose to include a limited two-sided component to our WINEP cost adjustment mechanism, restricted to this environmental outcome for the Manchester Ship Canal alone (i.e. not a general two-sided mechanism, as we had previously sought). If it is not triggered (i.e. in the unlikely event that the Environment Agency do not require further work to be undertaken), customers are no worse off as we are not seeking for this expenditure to be included within the cost allowances for the Final Determination. This protects customers in that they will only pay if the Environment Agency confirm the scheme as green certainty in our WINEP, as we expect.

We also propose to only adjust for our expectation of the cost for this scheme, which is less than that implied by the current WINEP mechanism rates, and lower than that predicted by Ofwat’s cost models, further protecting customers.

Table 3 Estimated expenditure for Ofwat models, WINEP unit rates and U UW estimate

Scheme element	Ofwat models	WINEP mechanism	U UW estimate
Phosphorus 0.4mg/l	£56.2m	£40.0m	
Ammonia 2mg/l, BOD ₅ 15mg/l	£4.8m	n/a ¹	£36.5m
Increase in FTFT 50MI/d	£9.9m	n/a	
Increase in storm storage 63.5 MI	£44.5m	£56.5m	£41.8m
Total	£115.3m²	£96.5m	£78.3m

If the scheme is included within WINEP, customers are protected against non-delivery of agreed schemes in the following ways:

Treatment works compliance ODI (S3001, C02-CF) - If we fail to deliver improvements to our discharges on time, we would expect the Environment Agency to issue the revised permit unless we had agreed a suitable exchange for another scheme. Once the permit comes into force it is very likely we will fail to meet the standards without investment. This will lead to the treatment works being non-compliant under our ODI. As we have a target to reach 100% treatment compliance, and we will incur under performance payments if we have less than 99%

¹ U UW does not have a unit rate for Ammonia, BOD or FtFT within its WINEP uncertainty mechanism and so these values cannot be estimated.

² Total does not equate to the sum of the parts as this includes the WINEP efficiency adjustment applied by Ofwat. This efficiency value has been corrected in line with the approach set out in section 1.4.1 of ‘J003 – Cost assessment’. Model coefficients not updated to account for additional U UW scheme.

J003a – WINEP cost adjustment mechanism

compliance, it is very likely that non-delivery of outcomes under this line would lead to financial impacts.

Prosecution and fines - If a scheme is not delivered it is very likely that the treatment works would fail to achieve its permit and this could be by a significant margin. As a result, prosecution by the Environment Agency is a significant threat. If non-delivery is through deliberate actions by the company this is likely to influence the scale of any fines issued.

Reputational impact of not attaining 4 Environmental Performance Assessment status*- We have received a leading 4* rating under the Agency's Environmental Performance Assessment for 2015-2017 and a 3* rating in 2018. This assessment consists of seven metrics of which one is treatment works compliance. Only one out of the seven metrics can be amber and the remainder must be green to achieve this status. We recognise that treatment works compliance is a key area of the EPA we need to improve as it has been classed as amber for the last four years. Non-delivery of schemes would seriously jeopardise this.

8 Board assurance

The proposed scheme at Bolton WwTW is fully scoped and costed in the same way as schemes included in the enhancement supplementary documents within our United Utilities business plan 2020-2025, and therefore we consider that it confers an equivalent level of assurance to our September 2018 business plan.

9 Proposed form of WINEP adjustment mechanism

Whilst we note that some companies do have a two-sided cost adjustment mechanism in place for amber WINEP schemes not included within their business plan, it is not immediately clear how Ofwat intends to undertake these adjustments in order to ensure that companies are appropriately remunerating for subsequent additions. There are two key components required to ensure companies are appropriately remunerated:

- An adjustment to account for the change to the efficient totex baseline to prevent all the additional expenditure being treated as an overspend within the totex (sharing) reconciliation mechanism and,
- An adjustment to account for the additional costs incurred (and hence additional revenues required) not recovered in AMP7 for the additional (allowed) expenditure incurred.

Both of these mechanisms are required in order to reconcile an in period addition to the WINEP programme. In the following sections, we set out how we believe Ofwat should undertake the adjustments for each of these components at PR24, in the event that a new (approved) scheme is added to the WINEP. Whilst our comments and examples primarily focus on the application of the mechanisms and reconciliation relating to the addition of our specific scheme, the same underlying principles will apply to the reverse situation³, in the situation where amber schemes

³ We note that whilst Ofwat has allowed cost adjustment mechanisms for most companies, it has not currently specified how WINEP schemes will be removed from the totex allowances and allowed revenues at PR24.

J003a – WINEP cost adjustment mechanism

are removed from the WINEP, **which applies to all companies with a WINEP cost adjustment mechanism.**

We accept that the PR19 reconciliation mechanisms are still being developed but we believe it is beneficial to voice these requirements now as many of the proposals will apply in other instances and would benefit from a consistent approach from Ofwat. In particular, we note that we are also proposing this approach to be taken in respect of DPC schemes (in the event of a “DPC exit”), as set out in document J006 of our slow track DD representations. We welcome the opportunity for further discussions in support of developing these mechanisms for use at PR24.

9.1 Proposed update to Ofwat baseline efficient totex

The first adjustment that is required is to the AMP7 Ofwat efficient baseline totex used within the PR19 totex reconciliation mechanism (‘cost sharing’). An addition to WINEP will cause the allowed AMP7 expenditure to increase in line with the WINEP cost adjustment mechanism rate. If Ofwat does not update the baseline to account for this addition, all of the additional expenditure incurred will manifest as an underperformance. This observed underperformance would subsequently be shared with customers using the company specific sharing rate for that price control, resulting in the company only recovering a maximum of 50% of the allowed costs. It is therefore important that Ofwat update their baseline so that **cost sharing only reflects actual differences in efficiency and not differences in scope.**

With the cost-sharing model for PR19 reconciliation⁴ still being in development, the following two issues should be accounted for prior to inclusion within the final model to be used at PR24.

9.1.1 Value of the adjustment (UW specific scheme)

As the scheme at Bolton WwTW is not currently within our business plan there would need to be an addition to the baseline to account for its inclusion. If it is confirmed within the final WINEP, we propose (in order to protect customers) that **Ofwat should increase the value of the baseline by the lesser of:**

- Ofwat’s WINEP cost assessment model,
- Our WINEP cost adjustment mechanism (albeit that mechanism is “one-sided”) unit rates, or
- Our internal cost estimate for the scheme.

Our current best estimate for the requirements of this scheme would indicate that our internal cost estimate is the lowest expenditure, and that is therefore the value that we propose to apply in the event that it is required. This is shown within Table 4 below, providing further evidence that our estimating and cost proposals are efficient whilst also offering a higher level of customer protection than would be afforded under the standard approach of using the company WINEP unit rates.

⁴ <https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/pr19-reconciliation-models/>

J003a – WINEP cost adjustment mechanism

Table 4 Initial internal AMP7 cost estimate for potential Bolton WwTW scheme

Scheme element	Ofwat models	WINEP mechanism	UW estimate
Phosphorus 0.4mg/l	£56.2m	£40.0m	£36.5m
Ammonia 2mg/l, BOD ₅ 15mg/l	£4.8m	n/a ⁵	
Increase in FtFT 50MI/d	£9.9m	n/a	
Increase in storm storage 63.5 MI	£44.5m	£56.5m	£41.8m
Total	£115.3m⁶	£96.5m	£78.3m

These valuations are on the premise that the alternative strategy, once approved by the EA, will include these four drivers as “green” certainty.

9.1.2 Profiling of the adjustment

The second aspect that needs to be considered when making the adjustment to the baseline is how the allowed expenditure will be profiled. This has two important aspects:

- Cost reconciliations adjust for the time value of money (often referred to as ‘financing’) within the assessment and therefore the year in which expenditure occurs will impact the final value within the comparison to the baseline and,
- If a scheme spans AMPs then only a proportion should be included within the addition to the baseline with the residual forming part of the AMP8 allowance.

Ofwat could adopt several approaches in making the adjustment namely:

- Flat profile over AMP7,
- Standard ‘S’ curve approach using the regulatory delivery date,
- AMP7 Business plan totex profile, or
- Project specific profile.

As major interventions tend to constitute ‘lumpy’ expenditure profiles and the information should be readily available (for all companies), we propose that Ofwat should always seek to profile the adjustment to the baseline in line with the expenditure profile proposed by the company for the scheme added. For the Bolton scheme, in order to hit the prospective regulatory date, we estimate that the AMP7 expenditure profile would be as follows.

⁵ UW does not have a unit rate for Ammonia, BOD or FtFT within its WINEP uncertainty mechanism and so these values cannot be estimated.

⁶ Total does not equate to the sum of the parts as this includes the WINEP efficiency adjustment applied by Ofwat. This efficiency value has been corrected in line with the approach set out in section 1.4.1 of ‘J003 – Cost assessment’. Model coefficients not updated to account for additional UW scheme.

J003a – WINEP cost adjustment mechanism

Table 5 Proposed expenditure profile for Bolton WwTW

	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7
Capex	£1.4m	£6.9m	£25.3m	£25.1m	£19.7m	£78.3m
Opex	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m	£0.0m
Totex	£1.4m	£6.9m	£25.3m	£25.1m	£19.7m	£78.3m

As Ofwat currently profile the totex baseline in line with the company totex proposal, this approach will also be appropriate in the case where amber WINEP schemes that have been allowed for within the determinations are confirmed as no longer being required.

9.2 Proposed form of adjustment

Whilst updating the totex baseline is clearly an important requirement for the adjustment mechanism, **it does not (in of itself) correct for the revenue allowances in AMP7**. Having not included Bolton within our business plan (and in the event that no adjustment is made prior to the Final Determination), this means that there is also no associated revenue within the allowance that will be recovered from customers during the period. If the scheme is included within WINEP then not only do the costs need to be included within the baseline but also the associated revenues need to be allowed to be recovered from customers. We believe that there are two clear options available to Ofwat:

- An end of period revenue and RCV adjustment based on a full financial model re run using the revised cost baseline (which would be complex to operate); or
- An end of period (midnight) RCV adjustment including the adjustment for the time value of money (which would be much simpler).

We discuss the approaches and relative merits of these two options below.

9.2.1 Option 1 - PR19 Financial model calculation

This option would entail updating the PR19 Final Determination Financial model for the revised cost baseline and assessing the variance in the resulting allowed revenue over the period as well as the difference in the closing RCV (*ceteris paribus*). The annual difference in revenue could then be adjusted for the time value of money (as is the case under WRFIM) and the total AMP7 variance could be applied to AMP8 revenue requirements alongside other reconciliation adjustments e.g. ODI, totex etc. The difference in closing values of the RCV could then be made as a midnight adjustment prior to AMP8. This approach could apply to both schemes added and schemes removed from WINEP, enabling a 'net' WINEP adjustment to be calculated. One potential issue with this is that it would require greater effort from all parties to calculate and if the magnitude of change becomes significant, the validity of using the PR19 PAYG and RCV run-off rates may be debateable. We do not think it would be appropriate to attempt to revise these rates as it may result in too much volatility and will add a significant amount of further complexity to the reconciliation requirements.

- The advantage of undertaking the PR19 Financial model approach is that the revenue correction would most accurately reflect the change in AMP7 revenues that would have applied if the applicable schemes had been included in the PR19 determination.

J003a – WINEP cost adjustment mechanism

9.2.2 Option 2 - End of period (midnight) RCV adjustment

The alternative option would be to adjust the respective RCV by the additional totex having accounted for the time value of money as a midnight adjustment at the end of AMP7. This would be similar to the ‘logging up’ process previously utilised by Ofwat with the inclusion of the time value of money to account for the timing differences between when the expenditure is incurred and when revenue recovery commences (so net present value is equated). For the addition of Bolton, this would therefore require the following adjustment.

Table 6 Proposed RCV adjustment for inclusion of Bolton WwTW

	2020-21	2021-22	2022-23	2023-24	2024-25	AMP7
Totex increase	£1.4m	£6.9m	£25.3m	£25.1m	£19.7m	£78.3m
Discount rate (Ofwat slow track DD WACC, CPIH stripped)	3.08%	3.08%	3.08%	3.08%	3.08%	
Years for discounting purposes	4	3	2	1	0	
PV of totex increase	£1.5m	£7.5m	£26.8m	£25.8m	£19.7m	
NPV						£81.5m

- The advantage of undertaking the RCV midnight adjustment is that it is more simple and transparent to implement and as the RCV returns revenues over a longer period, it will reduce any potential volatility on customer bills.

UW proposal

Given these two options, we believe that it would be most appropriate for Ofwat to undertake the second approach if the scheme is included within the final WINEP and add £81.5m (£78.3m cost of the scheme plus time value of money) to the RCV as part of the AMP8 “midnight adjustment”, as at 1 April 2025.

Given that any adjustment would likely be considered a significant change to the company, it seems certain that it would require publication of event, along with expectations for how the issue would then be addressed. Whilst it could be published each year, along with Ofwat’s in-period ODI determinations, an addition would be sufficiently significant to be price sensitive, and require publication (along with a suitable RNS, particularly in the case of a listed company such as UW) to explain the circumstances, and to inform shareholders and other stakeholders of the impact to the company.

Appendix 1: Joint Statement on Manchester Ship Canal Strategy

Manchester Ship Canal Catchment System Strategy Workshop 1 (21/06/19) Joint Statement



1. All parties considered that the workshop was successful in exploring the issues around addressing dissolved oxygen in the Manchester Ship Canal (MSC) and identifying next steps.
2. All parties acknowledge that there is a dissolved oxygen issue in the MSC.
3. All parties are bought into the principles of a long term strategy for improvements to the MSC built around the solution for addressing the dissolved oxygen issue in the shorter term and acknowledge the benefits of a wider strategy linked to the Defra 25 year plan.
4. Modelling actions have been agreed to demonstrate current dissolved oxygen levels and the improvements and therefore benefits that can be delivered by further interventions.
5. It was acknowledged that there is a conflict between the standards being considered in that the Fundamental Intermittent Standards (FIS) allow failures of the 4mg/l FWF standard.
6. All parties acknowledge the practical infeasibility of delivering aeration over the full length of the canal required by the AMP6 NEP.
7. All parties agreed that the strategy should now focus on development of solutions which focus on what can be achieved in terms of technical feasibility and benefits. This will include consideration of how compliance is measured. The aim is to get as close to the standards as is technically feasible.
8. It was agreed that a limited number of scenarios for interventions need to be reviewed through the model to determine how far we can feasibly go if an answer is to be arrived at in time for a submission to Defra. The focus therefore needs to be on identifying options that are likely to lead to significant changes in the DO concentrations in the canal. There was acknowledgement of the benefit of water quality improvements being followed by physical changes (habitat enhancements) to improve the sustainability of cyprinid fish populations.
9. Natural capital needs to be applied to the consideration of a matrix of interventions and wider environmental aspirations. This includes the aim to restore a salmon fishery in the Irwell catchment dependent on the construction of fish passes with seasonal dissolved oxygen needs being met.
10. A submission to Defra regarding the obligation currently on the AMP6 National Environment Programme (NEP) needs to be made by the end of October at the latest and a draft version

needs to be circulated ahead of submission. A timeline needs to be developed for this and there is a need to confirm what information is required to put this proposal to Defra to change the NEP obligation. An outline of what should be included was raised:-

- A schedule of actions to address the dissolved oxygen issue against the key dates of the
 - end of AMP6 (March 2020)
 - end of the 2nd RBMP (December 2021)
 - end of AMP7 (March 2025)
 - AMP8

- Confirmation of the funding mechanism

11. It was noted that UU have made representations to Ofwat on their draft determination (DD) as the way their WINEP uncertainty mechanism is written in the DD only allows schemes to be removed from their AMP7 business plan. Whilst UU have asked for early feedback from Ofwat because this issue is important to the Manchester Ship Canal Strategy there is a risk that this does not materialise until the final determination is published by Ofwat in December 2019. This may leave a challenge in terms of timescales for getting Defra approval to an alternative strategy for the Manchester Ship Canal. UU are continuing to try to influence this issue.

12. A SWOT analysis of measures that in the main could be implemented before March 2020 was undertaken. The output is to be considered further.

13. Further meetings:

- a. Next workshop scheduled for 3rd September 2019 which will focus on options and the 25 year objective for the Canal.
- b. Further modelling technical review meetings to be held on 27th June and 25th July 2019.

Endorsement for this Joint Statement is provided by:

	Mark Garth United Utilities Wastewater Area Business Manager – South Area
	Mark Easedale Environment Agency Area Environment Manager
	Keith Hendry Chairman, Mersey Rivers Trust

Appendix 2

Table 7 Environment Agency WINEP traffic light definitions

Traffic light	Evidence	Certainty	Status of measure	Justification
Green	Available and confirmed	High	Certain	Evidence that water company action is needed, there is clarity on the required measure, the measure is considered cost beneficial and affordable (where this assessment is applicable). Affordability is a ministerial decision.
Amber		Medium	Indicative	In the business plan 2015-2020 this was called the uncertainty programme. Evidence that water company action is needed, there is a clarity of a developing clarity on the required measure, the measure is considered cost beneficial, but awaiting ministerial decision on affordability (2021 River Basin Management Plan sign off). Schemes may move to green during the business plan period 2020-2025.
Red		Low	Unconfirmed	Evidence that water company action is needed but the measure is not yet clarified, may turn amber or green during the business plan period 2020-2025.
Purple	Needs gathering	Minimal	Provides a direction of travel	The Environment Agency know that the water company will need to do work in the future.