

UUW53

Candidate DPC Projects

October 2023

Chapter 8 supplementary document

This document contains the stage 1 strategic case assessments for all five schemes shortlisted for DPC at PR24. It includes explanation of the need and an assessment of the project against Ofwat's PR24 requirements for delivery under DPC for all five shortlisted schemes, and the further DPC-specific stage 1 deliverables for schemes identified as potentially suitable for DPC.

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1. Overview of candidate DPC schemes

1.1 Key Messages

- **Two schemes proposed for Direct Procurement for Customers:** we have further reinforced our ongoing support for the DPC approach with our proposal to designate two schemes for DPC. One of these is a late tender model DBFM scheme (Manchester Ship Canal BOD programme) with a totex of £313 million. The other is a potential DBFMO scheme at Wigan and Skelmersdale which could be designated for delivery in AMP9 under an early DPC tender model. Both of these schemes would require the agreement of the Environment Agency to revised regulatory dates.
- **Ambitious and positively disposed assessment:** UUW has brought an ambitious and positive disposition into our assessments, using our experience from HARP to consider mitigations for potential obstacles to DPC and to identify the opportunity to bundle multiple large projects into a programme of work (Manchester Ship Canal BOD) to increase market participation and achieve best value outcomes for customers through economies of scale.
- **Programme plan to deliver benefits as early as possible:** we have used our existing DPC experience to develop both a realistic baseline programme starting as early as possible (subject to Ofwat and EA agreement) and a stretch programme to use as a target to outperform the baseline and maximise the probability of early delivery.
- **Open-minded approach to commercial model:** our early thoughts on the commercial construct for our schemes identified as suitable for DPC are based on Ofwat's guidance with any exceptions to be informed by market engagement and on the basis of driving better value for money for customers.

1.2 Structure

- 1.2.1 This document sets out the Stage 1 strategic case assessments that UUW has undertaken on the five schemes that have been shortlisted as part of the first stage filtering process. It should be read in conjunction with supplementary document *UUW52 - Direct Procurement for Customers: Overview* which covers the first stage filtering process and sets out our approach to the assessments.
- 1.2.2 In accordance with the Stage 1 requirements set out by Ofwat within its published 'Guidance for Appointees delivering DPC projects', this document forms the strategic case assessments in turn for each a) individual project and b) eligible bundle of projects that meet Ofwat's specified criteria (i.e. projects over £200 million and programmes of similar projects with similar construction requirements, asset values over £5-10 million and asset lives of around or greater than DPC contract length).
- 1.2.3 In producing this document, United Utilities has followed Ofwat guidance, specifically:
- Appendix 5: Direct Procurement for Customers dated December 2022;
 - Guidance for Appointees delivering DPC projects dated March 2023;
 - Direct Procurement for Customers – Technical discreteness guidance dated April 2023; and,
 - Technical Discreteness Guidance (Additional clarification) dated 3 July 2023.
- 1.2.4 The remaining sections of the document set out the stage 1 assessments for each scheme in turn. Each assessment include an explanation of the need for the project (including optioneering) and an assessment of the project against Ofwat's PR24 requirements for delivery as a DPC project. For the schemes that meet these requirements, the stage 1 strategic case assessments also include high-level proposed programme plans, procurement timetables, commercial and tender models.

1.3 Overview of assessment against PR24 requirements for delivery as a DPC project

1.3.1 On 31 March 2023, United Utilities participated in a DPC engagement meeting with representatives from Ofwat. During the meeting, we discussed our understanding of Ofwat's DPC guidance and presented a range of potential DPC schemes with varying degrees of suitability. With feedback from Ofwat, including the final publication of technical discreteness guidance and clarification notes, we were able to refine and implement a robust, objective and clear filtering process to establish a shortlist of five schemes from our capital delivery pipeline and assess these projects against PR24 requirements for delivery under DPC.

1.3.2 Building on the designation and procurement of our AMP7 'pathfinder' DPC scheme, Haweswater Aqueduct Resilience Programme (HARP), we have reinforced our ongoing support for the DPC approach in assessing as suitable for DPC one scheme in AMP8 and an AMP9 scheme which could become suitable for DPC, both subject to agreement with the EA on revised regulatory dates. UUW benefits from the experience gained through the development and procurement of HARP in carrying out these strategic assessments, and this experience will be invaluable in moving forward with the proposed DPC schemes.

Manchester Ship Canal (BOD) programme:

1.3.3 Consisting of investment across three WwTW sites, we have identified an opportunity to cluster a series of projects within close geographical proximity, with similar construction profiles and regulatory drivers. By combining three individual projects, we believe this would make an attractive proposition to the market while providing value to customers through economies of scale. The DPC proposed scope (DBFM) has an estimated totex of £313 million. Further details are set out in section 2.

Wigan WwTW & Skelmersdale WwTW:

1.3.4 This project currently has regulatory dates in AMP8 that the EA has indicated it is not minded to move to AMP9. Subject to a change in the EA's position, UU would consider the project to meet the criteria of DPC by default and would propose to start development and procurement activities in AMP8, for delivery in AMP9. Recognising the scale of the scheme and opportunity for development of the solution with the market, subject to reaching agreement with the EA, we would seek approval from Ofwat to commence DPC procurement during AMP8. This approach would allow us to accommodate longer DPC procurement activity and potential consideration for tender models with early contractor involvement. The estimated totex value for DBFMO is £617 million. Further details are set out in section 3.

1.3.5 Of the five schemes identified within the shortlisting process, the following three projects were considered not to be suitable for DPC:

Eccles WwTW:

1.3.6 [✂

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Davyhulme WwTW P Removal:

1.3.7 This project currently has a regulatory driver to prevent deterioration in water quality due in 2026. It would not be possible to achieve this tight timescale in anything other than an accelerated BAU delivery approach, and while UUW has asked the EA to move this date, the EA is not currently minded to agree. Notwithstanding the difficulty of accommodating DPC delivery timescales, the operations and maintenance risk test for this scheme indicates a number of reasons why the risks associated with operations and operational maintenance cannot be transferred to the CAP. Rerunning the programme

scalability test without this scope reduces whole life totex to £107 million, below the £200 million threshold. Further details are set out in section 5.

WINEP Habitats Programme (waste):

- 1.3.8 We identified the wastewater aspects of the WINEP Habitats programme as a potential programme of work for consideration for DPC delivery due to similarities of project characteristics including relative proximity, composition and regulatory drivers. The 18 projects shortlisted as part of the programme were screened using the DPC technical discreteness test and we identified a subset of these projects that are not suitable for delivery by DPC. Seven projects have nutrient neutrality drivers and must be commenced promptly upon the enactment of the Levelling Up and Regeneration Bill, and UUW cannot accommodate DPC timescales while meeting this legislative requirement. A further two projects do not pass the construction risk test due to flexible permitting requirements and the need to work closely with third parties. Reapplying the programme scalability test following the removal of these projects takes the value of the programme to £154 million, below the DPC threshold. Further details are set out in section 5.
- 1.3.9 The summary outcome against the discreteness assessment criteria is shown in the Table 1 below, with a more detailed version of the table provided in supplementary document *UUW52 – Direct Procurement Overview*.

Table 1: Assessment against PR24 requirements for delivery as a DPC project

Scheme	Programme Scalability Test	Construction Risk Test	Operations & Maintenance Risk Test	Assessed Suitable for DPC	Narrative
Manchester Ship Canal BOD Programme (Salford, Sale and Stockport)	Conditional PASS (conditional on EA agreement of revised regulatory dates)	PASS	Partial	SUITABLE	Suitable for DPC conditional on EA agreement of revised regulatory dates. DBF(m)
Eccles WwTW	NOT SUITABLE	NOT SUITABLE	N/A	NOT SUITABLE	
WINEP Habitats Programme	NOT SUITABLE	Partial	N/A	NOT SUITABLE	
Davyhulme WwTW P Removal	NOT SUITABLE	PASS	Partial	NOT SUITABLE	
Wigan WwTW & Skelmersdale WwTW	Conditional PASS (conditional on EA agreement of revised regulatory dates)	PASS	PASS	PASS	Suitable for AMP9 DPC delivery subject to EA agreement of revised regulatory dates. Potential full DBFMO

Source: UU assessment

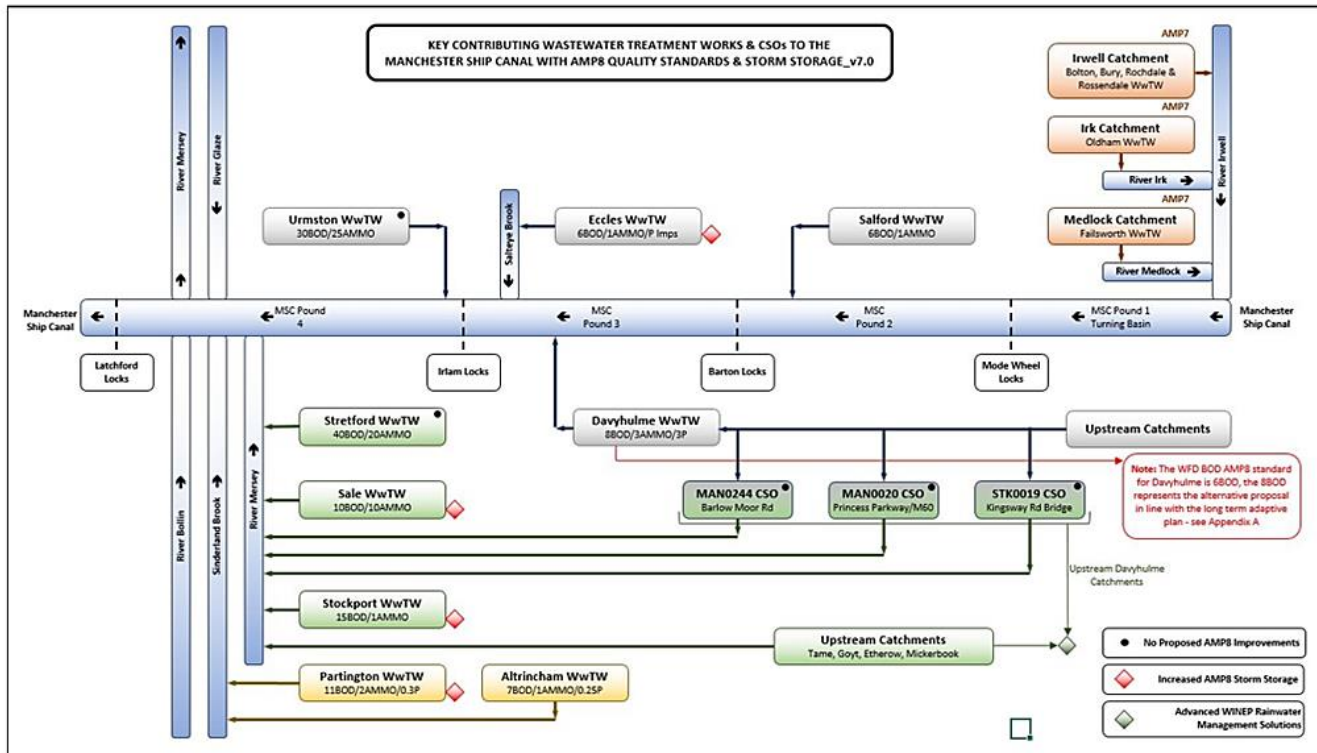
**STAGE 1 STRATEGIC CASE ASSESSMENT
MANCHESTER SHIP CANAL
BOD PROGRAMME
(SALFORD, SALE AND STOCKPORT)**

2. Manchester Ship Canal (BOD) programme

2.1 Introduction

- 2.1.1 The Manchester Ship Canal (MSC) between Salford Quays and Bollin Point replaced the natural river system when it was constructed in 1894 and since then has been subject to a range of pressures that have impacted water quality, leading to current challenges in meeting the requirements of the Water Framework Directive (WFD).
- 2.1.2 The wastewater from a growing population of 2.8 million people, (population equivalent of over 3.5 million), in Greater Manchester drains via the Ship Canal catchment. Figure 1 below outlines the key wastewater discharges within the Manchester Ship Canal catchment that have been evidenced as impacting water quality and are to be considered as part of WINEP and our adaptive plan.
- 2.1.3 Furthermore it highlights AMP7 and AMP8 investment as part of the MSC adaptive plan. The plan outlines our current view of benefits associated with the Manchester Ship Canal that are primarily associated with those sites with direct discharges i.e. Salford WwTW, Eccles WwTW and Davyhulme WwTW. However, wider system benefits, mainly through phosphorus removal (including associated BOD improvements) and storm water management, also contribute at varying scales both now (in AMP7) and as part of the long-term adaptive plan.
- 2.1.4 The impact of our operational discharges and third-party industrial discharges, as well as run off to the canal from heavily populated catchments, is exacerbated by the structure and nature of the canal. This deep, slow moving body of water is separated into pounds by a lock system that, while serving navigation and flood mitigation needs, promotes stagnation, stratification and sediment retention causing low dissolved oxygen and barriers to fish migration. The canal also experiences high levels of nutrient loading (including phosphorus), creating pressures for deterioration in Water Framework Directive (WFD) classifications.
- 2.1.5 It has been evidenced through robust water quality modelling that improving the water quality within the canal, to meet WFD compliance and support migratory fish populations, cannot be achieved by our interventions alone. This is because the canal doesn't act like a normal river system and in particular it suffers from low levels of dissolved oxygen during warmer weather and lower flow conditions.
- 2.1.6 As water quality improvements require multiple stakeholders to contribute to the solution, the establishment of the Mersey Rivers Trust hosted Manchester Ship Canal Partnership Forum has been key to leading the co-design and co-delivery of a long-term multi beneficial environmental improvement strategy for the Canal.
- 2.1.7 In-line with the Partnership Forum plan we have conducted significant investigations and modelling of the Manchester Ship Canal which have led to investment at treatment facilities and storm overflows discharges, directly and indirectly to the Canal. These historical interventions have improved water quality and met environmental standards where technically feasible. However, challenges remain with WFD targets, along with new and stretching environmental legislation which leads us to the development of the MSC adaptive plan.

Figure 1: Key wastewater discharges within the Manchester Ship Canal catchment



Source: UU

2.2 Programme scalability test

2.2.1 As we have set out in our supplementary document: UUW52 DPC Overview, we are proposing the 'bundling' of the following three large investment projects into one programme of work: Salford WwTW BOD; Stockport WwTW BOD; Sale WwTW BOD, collectively referred to as the Manchester Ship Canal BOD Programme (MSC BOD). As such, while we have considered the programme scalability test for the programme as a whole, we have considered the construction risk and operations and maintenance risk tests for each component project individually, to enable consideration of the characteristics of each project and ensure each element of the DPC bundle is suitable.

2.2.2 The biological oxygen demand (BOD) schemes at Salford, Stockport and Sale have been bundled for numerous reasons. The scheme requirements are to achieve an improved BOD performance across all three sites, improving the quality of the final effluent discharging directly, or in Sale and Stockport's case indirectly, into the Manchester Ship Canal. The sites are all located within a ten-mile radius and are all operated and maintained by the same production team. The projects have similar characteristics, with enhancements being delivered within an existing wastewater treatment process therefore the construction risks and the management of these risks are likely to be similar. That said, the operations risks differ across the three sites however, we do not consider this to be an impediment to bundling as set out in the narrative against the operations and maintenance risk test below.

TEST: For individual projects or assets, is the sum of the whole life Totex for the single project or combined projects/assets proposed by a water company over one or more successive control periods less than £200m?

2.2.3 The full scope (including operations and maintenance of the programme) has a whole life totex of c£540m. For the reasons set out within the respective operations and maintenance risk tests for the three projects, we consider that the risks associated with operations and operational maintenance cannot be effectively transferred to a CAP. As a result we have re-assessed the scalability test to consider capex and only the element of maintenance activity (life cycle maintenance) which has passed

the operations and maintenance risk test. A wholelife cost breakdown for the programme is shown in Table 2.

- 2.2.4 On this basis, the result of the programme scalability test for MSC BOD is: No, the combined sum of the applicable whole life cost (Totex) for the entire scheme is approximately £313 million.

Table 2: Manchester Ship Canal (BOD) programme – whole life cost

Project	Capex (£m)	Totex (full operations and maintenance)	Totex (life cycle maintenance only)
STOCKPORT WwTW (BOD)	24.6	90.0	39.0
SALFORD WwTW - BOD	212.8	386.7	232.2
SALE WwTW (BOD)	32.0	63.0	41.4
Subtotal	269.4	539.7	312.6

Source: Programme totex build. For the purposes of this assessment, life cycle maintenance is assumed to be 75 per cent of maintenance cost.

- 2.2.5 While the wording of the programme scalability test does not specifically reference timescales, Ofwat's DPC guidance for this test recognises that companies may face delivery dates imposed by third parties that may make DPC delivery difficult. We have conducted an assessment of DPC delivery timescales in comparison to the regulatory dates set by the EA for each scheme in turn, with our assumptions for DPC delivery timescales being informed by HARP and Ofwat's guidance, and set out in UUW52 section 4. As presented in Table 3 below, this review has revealed that DPC delivery is likely to jeopardise the achievement of our regulatory commitment dates on each project, should these not be amended. The extended procurement dates assumed for DPC procurement, partly influenced by the Ofwat anticipated timescales and the volume of activity required for stages 1 to 2 (submission preparation) and stages 2-3 (contract development), contribute to this risk.

Table 3: Manchester Ship Canal (BOD) programme – assessment of delivery timescales

Project Name	BAU contract award	DPC contract award (baseline)	DPC contract award (stretch)	BAU PIU	DPC PIU (baseline)	DPC PIU (stretch)	Current regulatory date
SALFORD WwTW - BOD	Apr-25	Apr 28	Apr 27	Oct-31	Oct-34	Oct-33	31/03/2030
STOCKPORT WwTW (BOD)	Jun 25	Apr 28	Apr 27	Jun 29	Apr 32	Apr-31	31/03/2030
SALE WwTW (BOD)	Aug 25	Apr 28	Apr 27	Sep-29	May-32	May 31	31/03/2030

Source: UU assessment

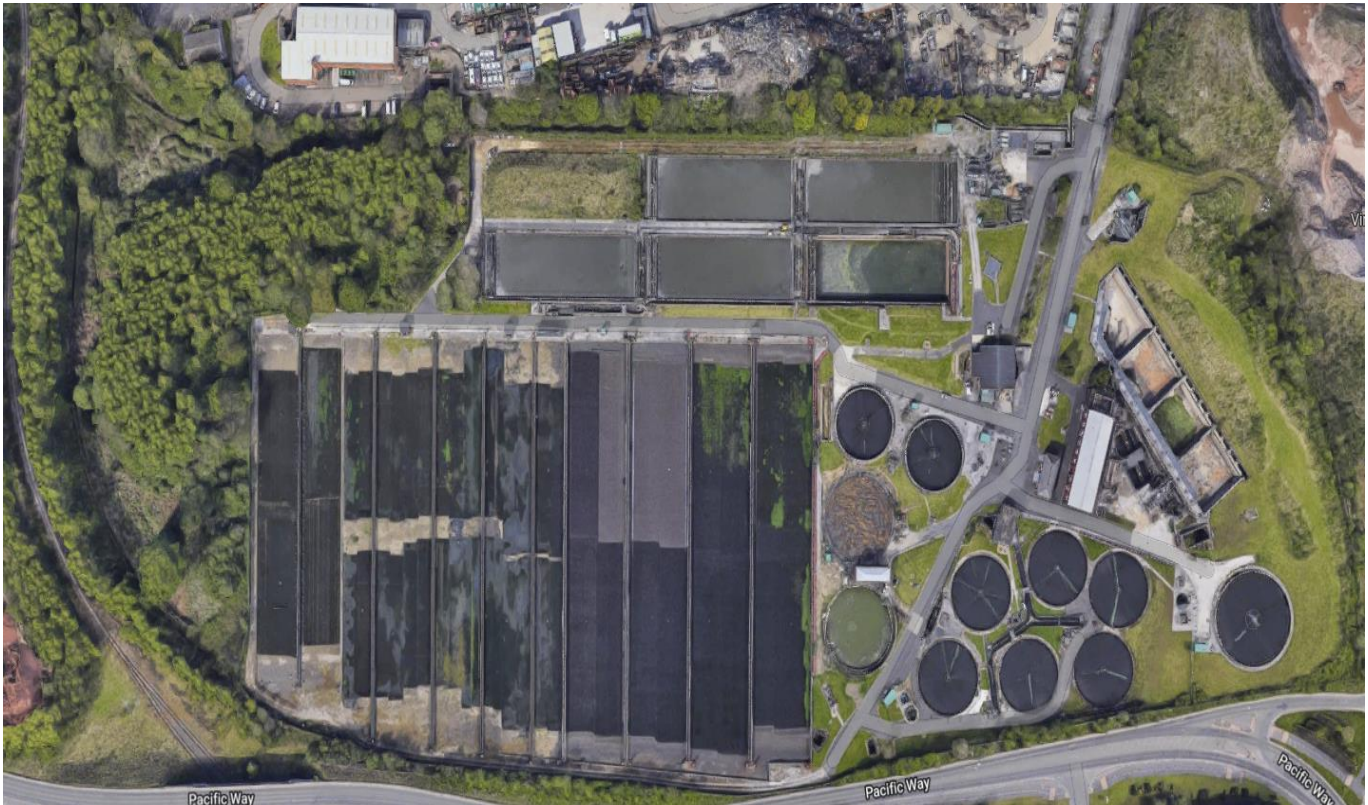
- 2.2.6 Throughout the process of developing our DPC suitability assessments, we have actively collaborated with the EA, holding a series of meetings to discuss our identified candidate projects and the potential impact on delivery dates of developing and procuring DPC schemes. The main goal has been to promote a common understanding of the process for DPC (and the timing constraints this imposes) where schemes qualify as DPC by default in the absence of consideration of regulatory date constraints, and to seek support in adjusting the regulatory dates to accommodate a DPC procurement. The regulatory date for Salford WwTW (BOD) needs to be amended irrespective of delivery approach, and a further extension to that, together with a likely less material delay to the Stockport and Sale projects would be required to make a DPC scheme feasible for this bundle of projects.

- 2.2.7 At the date of writing, the EA has indicated that these schemes must be delivered by March 2030. Although discussions are ongoing, in the absence of regulatory date changes, this DPC scheme would not pass the programme scalability test. Therefore, we put forward this scheme for DPC conditional upon UUW obtaining agreement from the EA to provide the flexibility against the current date to accommodate DPC procurement timescales (including any risks associated with an abortive DPC procurement process).
- 2.2.8 Recognising the importance of delivering the environmental benefits associated with the identified AMP8 DPC scheme Manchester Ship Canal BOD programme (as reflected in the regulatory dates), we have also challenged our baseline programme to identify the fastest realistic time to deliver a DPC procurement, without any allowance for contingency, which would be dependent on close collaboration between UUW and Ofwat during the development phase (stages 2 and 3) and rapid decision-making by all parties. This is set out in further detail in section 2.14 and 2.14.5.

2.3 Salford WwTW (BOD) scheme overview

- 2.3.1 Salford WwTW discharges into the Manchester Ship Canal and the works outlined are intended as part of the long-term adaptive planning strategy of the region. A programme of enhancement works is required to meet EA water quality thresholds in relation to biological oxygen demand (BOD) and ammonia in final effluent. This site also needs to accommodate an increase in population within the catchment. In addition, existing assets must be decommissioned to make way for the new plant.
- 2.3.2 UUW will specify Best Available Technique (BAT) solutions at Salford WwTW to meet the BOD and Ammonia drivers. The principal components of AMP8 solution are a New Enhanced Biological Phosphorus Removal Activated Sludge Plant (BioP ASP), Surplus Activated Sludge (SAS) thickening, new final tanks and refurbishment of existing primary settlement tanks and supporting ancillary works. The solution sits within the existing footprint. Figure 2 below shows an aerial photograph of the existing site and WwTW..
- 2.3.3 Within the options development process, a series of unconstrained options have been identified against a list of Generic High-Level Solution (GHLS) categories. Two viable options were considered:
- New Asset Option 1 - Refurbishment of existing Primary Settlement Tanks (PSTs), new Bio-P Activated Sludge Process (ASP) with Secondary Activated Sludge (SAS) thickening and new Final Tanks.
 - New Nature Based Solution Option 2 - New Asset Option 1 - Refurbishment of existing Primary Settlement Tanks (PSTs), new Bio-P Activated Sludge Process (ASP) with Secondary Activated Sludge (SAS) thickening and new Final Tanks.
- 2.3.4 Among the two feasible alternatives proposed, the Nature-Based Solution was deemed inadequate due to the lack of available land near the asset.
- 2.3.5 The New Asset Option 1 was chosen as the least cost and preferred option on the basis that it meets the requirements, is technically feasible and is assessed as being deliverable.

Figure 2: Salford WwTW - Aerial photograph – Existing site layout



2.4 Salford WwTW (BOD) - technical discreteness assessment: construction risk test

TEST: Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements?

- 2.4.1 No, there are no significant reasons why most construction risks cannot be transferred to the CAP.
- 2.4.2 While a number of notable risks have been identified, we believe that it is possible to mitigate these through contractual or commercial arrangements. The existing assets at Salford WwTW occupy a large percentage of the existing footprint on site (see Figure 2 above) and there will be limited available space to construct the new assets. Therefore, to deliver the new project at Salford, careful consideration will be required to manage the construction programme, to integrate old and new assets into the process and to ensure that the site remains compliant with its environmental permit.

2.5 Salford WwTW (BOD) - technical discreteness assessment: operations and maintenance risk test

TEST: Is there any significant reason why the maintenance and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

- 2.5.1 We believe there are a number of significant reasons as to why the majority of the risks associated with operations and operational maintenance cannot be effectively transferred to the CAP. We do however consider the responsibility for “asset life cycle maintenance” (which is defined as discrete and planned, preventative maintenance activity) limited to assets that the CAP is involved with constructing or installing can be transferred to the CAP.
- 2.5.2 Salford WwTW is included within the innovative MSC Catchment Flexible Permit for Phosphorus Operating Techniques Agreement (OTA). This flexible permit forms part of the MSC adaptive plan for the Manchester Ship Canal managing investment across a suite of assets over the next 25 years. This plan targets a phosphorus load reduction which must be achieved as a collective across eight sites within the

catchment where, we currently collectively control the chemical dosing to manage performance and maximise opex efficiency.

- 2.5.3 With UUW managing the operation of the other seven sites within the catchment, we have challenged whether a CAP could operate Salford WwTW in isolation with a contractual mechanism in place to receive and respond to requests by UU to adjust output accordingly to enable compliance with the OTA. In practical terms, while we could instruct the CAP to manage the site a certain way to achieve an output, we would need continued flexibility to ensure consistency of operation, and to manage any and all compliance issues across all the sites that are covered within the catchment. Due to the level of complexity associated with this operational compliance risk, a single operations team would be required to manage and mitigate the compliance risk for the OTA across all sites within the catchment, it would not be feasible or cost efficient for this responsibility to be split across more than one operational teams. On this basis it would not be value for money for customers to transfer operations to the CAP
- 2.5.4 Furthermore, as set out above, our proposed AMP8 solution for Salford WwTW sits within an existing operational site. UUW is ultimately accountable as licence holder and operations must be undertaken within context of wider integrated system in which it operates, inclusive of any other assets that contribute to its control. The performance of wastewater treatment plans is contingent on all dependencies across all the different treatment processes over the site, this is not limited to the existing assets or those assets being constructed as part of the AMP8 solution. The risks associated with multi-point delivery are too significant and it would neither be practical for the CAP to be held accountable for operation of the assets it has constructed on this site or efficient for a site to have two operational teams. This position is further enhanced given the points in relation to the OTA above.
- 2.5.5 The site also interfaces with Bioresource operations. There is an existing sludge pipeline which sends sludge to Eccles WwTW and on to the Manchester Bioresource Centre (MBC) for processing. The sludge from Salford is pumped to Eccles and then onto MBC. Both these sites are constrained, with limited storage capacity at Eccles and processing capacity at MBC. There will need to be an element of control across all three sites as to have a sludge system that works and does not compromise wastewater treatment performance across each site. It would not be possible or efficient for a potential CAP to operate the sludge process without visibility and operational control of the wider system and work within certain parameters as to ensure compliance at both Salford and Eccles.
- 2.5.6 Finally, market engagement on the HARP programme suggests that the market is reluctant to bear risks outside of the CAP's control, which is likely to be the case in an operational existing WwTW with complex interfaces, as described above. This is also supported by recent market engagement published by RAPID. On this basis, and taken together with the arguments set out above, we believe the inclusion of operations and operational maintenance within this DPC scheme would reduce its attractiveness to the market and the potential to generate value for money for customers.

2.6 Stockport WwTW (BOD) – scheme overview

- 2.6.1 UUW will optimise interventions across its asset base to improve the dissolved oxygen (DO) levels within the Manchester Ship Canal. While currently our actions alone cannot meet the expectations for DO, we can make significant contributions towards the objective for DO. We will continue to model the best interventions and propose significant BOD reductions to the discharges from Davyhulme WwTW, Salford WwTW and Eccles WwTW as part of the MSC adaptive plan. Following investigation and modelling, we propose these interventions ahead of spill reduction interventions, as these are modelled to make the largest step change to the DO in the canal.
- 2.6.2 The solution is intended to supplement the direct discharges into the MSC indirectly in the Upper River Mersey at Stockport WwTW which will deliver to tighter BOD (15mg/l), Ammonia (1mg/l) and Phosphorus (2mg/l) consents, with a focus on storm storage improvements to at least WFD standards within AMP8. Low phosphorus solutions will also be progressed for 2037 as part of the adaptive plan (not currently in the DPC scope).

- 2.6.3 The solution at Stockport will provide new primary treatment and improved sludge management. The solution will also require decommissioning of existing tanks. We are currently considering the potential need to rebuild the low-level inlet works under the project; should this be required this scope could be considered for inclusion in the DPC scheme.
- 2.6.4 Within the options development process, a series of unconstrained options have been identified against a list of Generic High-Level Solution (GHLS) categories. Three options were considered:
- New Asset Option 1 - Process improvements to deliver quality drivers with new Primary Settlement Tanks (PSTs) and sludge thickening.
 - New Nature-Based Asset Option 1 - As option 1, but with an augmented open surface wetland to resolve the phosphorus driver.
 - New Asset Option 2 - As option 1, but with conversion/new assets to provide an Enhanced Biological Phosphorus Removal (EBPR (BioP), Activated Sludge Process (ASP) and Tertiary Solids Removal (TSR) process with tertiary chemical dosing.
- 2.6.5 Among the two feasible alternatives proposed, the New Asset Option 1 was chosen as the least cost and preferred option on the basis that it meets the requirements, is technically feasible and is assessed as being deliverable – moreover, it will improve water quality and catchment resilience.
- 2.6.6 Figure 3 below shows an aerial photograph of the existing site and WwTW.
- 2.6.7 The Nature-Based Solution Option 1 was deemed to be undeliverable due to the lack of available land on or around the site for the area of wetland required.
- 2.6.8 New Asset Option 2 remains a viable alternative.

Figure 3: Stockport WwTW - Aerial photograph – Existing site layout



2.7 Stockport WwTW (BOD) - technical discreteness assessment: construction risk test

TEST: Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements?

- 2.7.1 No, while a number of notable risks have been identified largely pertaining to constructability (working in proximity to live assets and interventions required across the treatment works) we believe these risks would exist regardless of delivery route, are not specific to DPC and therefore could be mitigated through construction techniques, phasing of activities and contractual mechanisms.

2.8 Stockport WwTW (BOD) - technical discreteness assessment: operations and maintenance risk test

TEST: Is there any significant reason why the maintenance and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

- 2.8.1 We believe there are a number of significant reasons as to why the majority of the risks associated with operations and operational maintenance cannot be effectively transferred to the CAP. We do however consider the responsibility for “asset life cycle maintenance” (which is defined as discrete and planned, preventative maintenance activity) limited to assets that the CAP is involved with constructing or installing can be transferred to the CAP.
- 2.8.2 As set out above, our proposed AMP8 solution for Stockport WwTW sits within an existing operational site. UUW is ultimately accountable as licence holder and operations must be undertaken within context of wider integrated system in which it operates, inclusive of any other assets that contribute to its control. The performance of wastewater treatment plans is contingent on all dependencies across all the different treatment processes over the site, this is not limited to the existing assets or those assets being constructed as part of the AMP8 solution. The risks associated with multi-point delivery are too significant and it would neither be practical for the CAP to be held accountable for operation of the assets it has constructed on this site or efficient for a site to have two operational teams.
- 2.8.3 Finally, market engagement on the HARP programme suggests that the market is reluctant to bear risks outside of the CAP’s control, which is likely to be the case in an operational existing WwTW with complex interfaces, as described above. This is also supported by recent market engagement published by RAPID. On this basis, and taken together with the arguments set out above, we believe the inclusion of operations and operational maintenance within this DPC scheme would reduce its attractiveness to the market and the potential to generate value for money for customers.

2.9 Sale WwTW (BOD) – scheme overview

- 2.9.1 UUW will optimise interventions across its asset base to improve the dissolved oxygen (DO) levels within the Manchester Ship Canal. While currently our actions alone cannot meet the expectations for DO, we can make significant contributions towards the objective for DO. We will continue to model the best interventions and propose significant BOD reductions to the discharges from Davyhulme, Salford and Eccles as part of the MSC adaptive plan. Following investigation and modelling, we propose these interventions ahead of spill reduction interventions, as these are modelled to make the largest step change to the DO in the canal.
- 2.9.2 To supplement the direct discharges into the MSC indirectly in the Upper River Mersey at Sale WwTW which will deliver to tighter BOD (10mg/l) consent, with a focus on storm storage improvements to at least WFD standards within AMP8.
- 2.9.3 The solution at Sale will be to provide improvements to the primary settlement tanks, re-purposing of combined PST/Storm tank to storm tank only and new PST.

- 2.9.4 Within the options development process, a series of unconstrained options have been identified against a list of Generic High-Level Solution (GHLS) categories. Three options were considered:
- New Asset Option 1 - Process improvements to deliver quality drivers with new Primary Settlement Tanks (PSTs) and refurbishment.
 - Nature- Based New Asset Option 1 - As option 1, but with an augmented open surface wetland to resolve the phosphorus driver.
 - New Asset Option 2 - As option 1, but with conversion/new assets to provide an Enhanced Biological Phosphorus Removal (EBPR BioP) Activated Sludge Process (ASP) with Mobile Organic Biofilm (MOB) and Tertiary Solids Removal (TSR) process with tertiary chemical dosing.
- 2.9.5 Among the two feasible alternatives proposed, the New Asset Option 1 was chosen as the least cost and preferred option on the basis that it meets the requirements, is technically feasible and is assessed as being deliverable – moreover, it will improve water quality and catchment resilience.
- 2.9.6 Figure 4 below shows an aerial photograph of the existing site and WwTW.
- 2.9.7 The Nature-Based Solution Option 1 was deemed to be undeliverable due to the lack of available land on or around the site for the area of wetland required.

Figure 4: Sale WwTW - Aerial photograph – Existing site layout



2.10 Sale WwTW (BOD) - Technical Discreteness Assessment: Construction & Risk Test

TEST: Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements?

- 2.10.1 While a number of notable risks have been identified largely pertaining to constructability (working in proximity to live assets and interventions required across the treatment works) we believe these risks would exist regardless of delivery route, are not specific to DPC and therefore could be mitigated through construction techniques, phasing of activities and contractual mechanisms.

2.11 Sale WwTW (BOD) - Technical Discreteness Assessment: Operations & Maintenance Risk Test

TEST: Is there any significant reason why the maintenance and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

- 2.11.1 We believe there are a number of significant reasons as to why the majority of the risks associated with operations and operational maintenance cannot be effectively transferred to the CAP. We do however consider the responsibility for “asset life cycle maintenance” (which is defined as discrete and planned, preventative maintenance activity) limited to assets that the CAP is involved with constructing or installing can be transferred to the CAP.
- 2.11.2 As set out above, our proposed AMP8 solution for Sale WwTW sits within an existing operational site. UUW is ultimately accountable as licence holder and operations must be undertaken within context of wider integrated system in which it operates, inclusive of any other assets that contribute to its control. The performance of wastewater treatment plans is contingent on all dependencies across all the different treatment processes over the site, this is not limited to the existing assets or those assets being constructed as part of the AMP8 solution. The risks associated with multi-point delivery are too significant and it would neither be practical for the CAP to be held accountable for operation of the assets it has constructed on this site or efficient for a site to have two operational teams.
- 2.11.3 The site also interfaces with Bioresource operations due to the sludge processing assets on site. This would create operational issues for the CAP to effectively operate the assets under a DPC arrangement without ultimate control of the sludge assets on site. The risks associated with multi-point delivery are too significant and it would not be possible or efficient for a potential CAP to operate the sludge process without visibility and operational control of the wider system and work within certain parameters as to ensure compliance at Sale WwTW.
- 2.11.4 Finally, market engagement on the HARP programme suggests that the market is reluctant to bear risks outside of the CAP’s control, which is likely to be the case in an operational existing WwTW with complex interfaces, as described above. This is also supported by recent market engagement published by RAPID. On this basis, and taken together with the arguments set out above, we believe the inclusion of operations and operational maintenance within this DPC scheme would reduce its attractiveness to the market and the potential to generate value for money for customers.

2.12 Manchester Ship Canal BOD Programme - Suitability Assessment Summary

- 2.12.1 United Utilities concludes that the scheme is considered suitable for DPC under a DBF (M) Design, Build, Finance, (Life Cycle Maintenance) arrangement.
- 2.12.2 The assessment is summarised in Table 4 below.

Table 4: Manchester Ship Canal (BOD) programme: summary of assessment against PR24 requirements for delivery as DPC

Guidance	Outcome	Narrative
Programme scalability test	PASS (conditional on EA agreement of revised regulatory dates)	No, whole life Totex is greater than £200m threshold. The full whole life totex for the projects in this programme is estimated at c£540m, however for the reasons set out in the assessments above, the scheme proposed for DPC does not include operations and operational maintenance. The totex for the DPC proposed scope is £313m (capex plus lifecycle maintenance over the course of the DPC arrangement). Timescales: The projected project in use (PIU) dates for delivery of scheme via DPC are beyond current regulatory dates. UUW agrees to designation on condition that agreement is reached with the EA on adjustment of dates to accommodate DPC delivery timescales. Suitable for DPC
Construction risk test	PASS	No, risks associated with interactions, location of new assets and constructability would exist regardless of delivery route, are not specific to DPC and therefore could be mitigated through construction techniques, phasing of activities and contractual mechanisms. Suitable for DPC
Operations & maintenance risk test	Partial	No, we consider the responsibility for “asset life cycle maintenance” (which is defined as discrete and planned, preventative maintenance activity) limited to assets that the CAP has constructed or installed can be transferred to the CAP. Operations and operational maintenance for these schemes cannot be effectively transferred to the CAP or managed through contractual arrangements due to the need to operate within a flexible permitting arrangement, the location of the new assets on existing UU operational sites and interfaces with Bioresources operations. Suitable for DPC (lifecycle maintenance only)

Source: UU assessment

2.13 Proposed Tender Model

2.13.1 In determining a tender model that could provide best value to customers, we have sought to consider the programme’s characteristics against what we believe to be the following key contributing factors:

- **Capability:** The relative value of UUW versus the market in delivering the early scoping and design phases of the project.
- **Market Maturity:** Is the external market well developed for the requirement? Differing tender models require a more mature market to be effective and provide value
- **Risk:** What is the market appetite to risk at relevant stages of the project? Decision enables tender model decision to be made based on party who can best mitigate and provide value.

- **Innovation:** What is the potential for innovation in delivering the requirement? Differentiates where it is important to engage the supply chain in innovation versus where UU should tightly define the requirements
- **Timing:** How urgent is the requirement and are there any interim delivery milestones that must be achieved? Differentiates between tender models which require longer lead times.

2.13.2 Taking all the above into account, we have determined that a ‘late’ tender model would be best suited to the requirements of this DPC project, providing the best value outcomes. Figure 5 below sets out our assessment of the scheme’s characteristics against the set criteria.

2.13.3 While there is an appreciation that the external market has both sufficient capability and maturity to support an early approach, the proposed model takes account of the current lack of appetite within the market to adopt early project development risk, particularly in this instance where we are considering a combined programme of three large complex investments at treatment works. The selection of the late model also reflects the time constraints on the MSC BOD programme, as this model will allow UUW to undertake initial surveys and design work in order to accelerate the delivery of the associated environmental benefits.

Figure 5: Proposed Tender Model

			Late	Rationale
Capability	The relative value of UUW versus the market in delivering the early scoping and design phases of the project.	Identify Need	Appointee	Market has sufficient capacity and capability, however as solution sits within existing WwTW, UUW has knowledge of existing assets and best placed to undertake initial development activities
		Identify options, choose preferred		
Market Maturity	Is the external market well developed for the requirement? Differing tender models require a more mature market to be effective and provide value	Initial design		Market sufficiently mature and would be best placed to seek value add through detailed design. Potential to expedite delivery through concurrent activity
		Surveys / Studies		
Risk	What is the market appetite to risk at relevant stages of the project. Decision enables tender model decision to be made based on party who can best mitigate and provide value	Planning / Consents		Current market engagement indicates that development risk with appointee is the most attractive proposition. This would enable UUW to undertake development activities earlier to minimise risk to regulatory commitment dates.
Innovation	What is the potential for innovation in delivering the requirement. Differentiates where it is important to engage the supply chain in innovation versus where UU should tightly define the requirements	Detailed Design	Tender	Due to the characteristics of the solutions, innovative solutions are not anticipated which aligns with a 'Late' model
		Procurement	CAP	
Timing	How urgent is the requirement and are there any interim delivery milestones that must be achieved? Differentiates between tender models which require longer lead times.	Build		Projected delivery milestones are tight, a Late model will enable earlier completion of development activities by UUW, de-risking the programme, while also unlocking ability for CAP to undertake concurrent activities, propose interim milestones
		Operate		

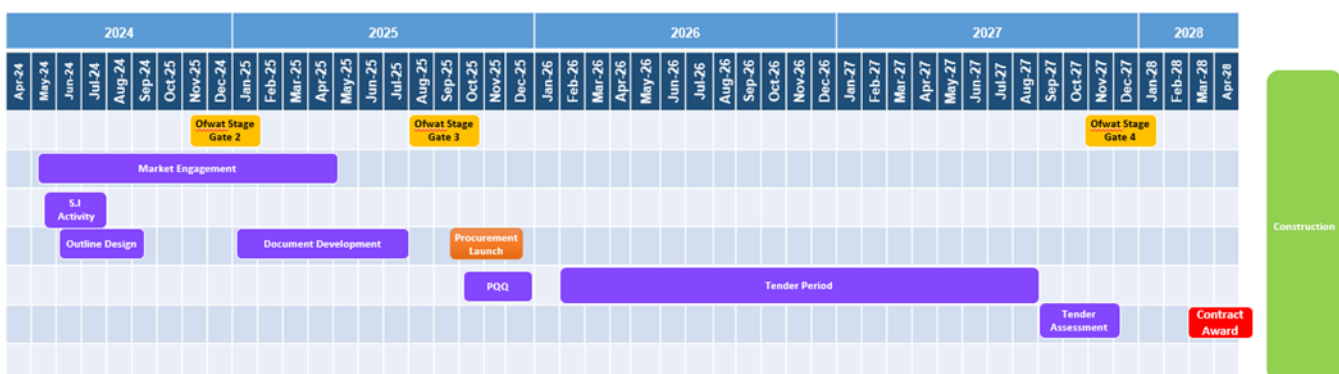
Source: UU analysis

2.14 Proposed programme plan

2.14.1 The high-level programme overview presented in Figure 6 below demonstrates the timeline for key procurement elements and approval gateways, all aimed at meeting our regulatory obligations. United Utilities has identified the time associated with development and procurement activities as a significant risk in executing this programme through DPC (as set out in UUW52: DPC overview). By adopting the late model, we believe we can accelerate initial activities and reduce potential schedule risks for the CAP, minimising the impact of the DPC delivery approach on the timeline. As a result of the need to work to regulatory dates which do not currently allow sufficient time for delivery under DPC, we believe it is critical to start work on the DPC development and procurement of the Manchester Ship Canal (BOD) programme as soon as possible, we have assumed a start date for development and procurement-related activities of April 2024. This start date is contingent on Ofwat acceptance of the DPC suitability of the scheme and agreement from the Environment Agency to allow for the required timescales for delivery of this scheme under DPC.

- 2.14.2 Initially developed from a ‘bottom-up’ approach with our PMO function and Project Managers, our baseline procurement timeline has been overlaid with direct experience from the ongoing development and procurement of HARP. It is likely to be possible to achieve some efficiencies in the timeline for developing DPC schemes compared to HARP, learning from what worked well and where processes can be improved, as well as to reflect the fact that some development and procurement activities on HARP as a pathfinder DPC scheme will not need to take place for future DPCs.
- 2.14.3 However, it is also likely that the contractor and investor markets interested in the candidate DPC schemes UUW is putting forward in this business plan will only partially overlap with the market engaged in the HARP procurement, and as a result, some areas of discussion with the market are likely to be duplicated in future DPC procurements. These counteracting effects have been accounted for within the strategic case assessments and while we have accounted for significantly faster progression towards procurement, have allowed for a similar baseline procurement timescale to the current HARP view, which is still considerably shorter than private finance norms
- 2.14.4 The baseline programme is captured in the plan below, with key milestones including:
- Stage 2 – December 2024;
 - Stage 3 – September 2025;
 - Procurement launch – October 2025; and,
 - Contract award – April 2028.

Figure 6: Proposed Programme Plan



Source: UU analysis

- 2.14.5 Recognising the importance of delivering the environmental benefits associated with the identified AMP8 DPC scheme Manchester Ship Canal BOD programme (as reflected in the regulatory dates), we have also challenged our baseline programme to identify the fastest realistic time to deliver a DPC procurement, without any allowance for contingency, which would be dependent on close collaboration between UUW and Ofwat during the development phase (stages 2 and 3) and rapid decision-making by all parties. This could deliver contract award up to a year earlier than the baseline programme. This “stretch” programme would not be prudent to adopt as our baseline, as it makes no risk provision for the duration of any activities. However, subject to agreement with Ofwat and the Environment Agency as set out above, we propose to use the stretch programme as a target to outperform the realistic baseline programme, and maximise the probability of early delivery of the scheme.
- 2.14.6 Under the most stretching assumptions, this would bring the key milestones forward as follows:
- Stage 2 – September 2024;
 - Stage 3 – March 2025;
 - Procurement launch – April 2025; and,
 - Contract award – April 2027.

2.15 Proposed procurement timetable

- 2.15.1 A high level view of the main procurement programme showing key milestone is shown in Figure 7 below. Manchester Ship Canal BOD scheme will be tendered as a combined programme, it is therefore appropriate to develop a procurement timetable which combines the respective programmes into one consolidated plan. It should be noted that dates included in the programme are indicative at this stage and will be informed following maturity of the project, further interaction with all stakeholders and following targeted market engagement.
- 2.15.2 UUW has a proven track record in delivering safe, robust and timely procurements with strict adherence to the Utilities Contract Regulations. Supported through our first-hand experience in the ongoing procurement of HARP (the pathfinder DPC project), we have developed a procurement timetable which we believe is compliant, realistic, and consistent with the baseline programme described above. As set out above, we have also set out an ambitious stretch programme to expedite achievement against our regulatory commitments, and will look to optimise the procurement timetable to deliver as closely as possible to the stretch timeframes.

Figure 7: Proposed procurement timetable

Date	Activity
February 2024	Optioneering Finalised
March 2024	Ofwat Stage Gate 1 Approval – Establishing the Strategic Case
April 2024	Commence development of stage 2 requirements
May 2024	Conclude Early Market Engagement
June 2024	Pre-construction / S.I activity
June 2024	Commence development of Heads of Terms
August 2024	Outline Design Complete
November 2024	Conclude procurement plan and commercial model development
December 2024	Ofwat Stage Gate 2 Sign off – Approach to procurement plans, outline of the commercial model and designation of the project
January 2025	Commence Targeted Market Engagement Activities
January 2025	Commence development of CAP Agreement
May 2025	Commence VFM Assessment
June 2025	ARD Discussions with OFWAT
August 2025	Finalise Commercial Model & Risk Allocation
September 2025	Ofwat Stage Gate 3 Approval – Gaining consent to procure the project
October 2025	PQQ issue Date
December 2025	PQQ Submission Date
January 2025	Pre-Qualification Evaluation Completed
February 2025	ITN Issue Date
September 2026	ITN Submission Date
December 2026	ITN Evaluation Completed
May 2027	Invitation to final tender
June 2027	Exceptions & Deviations Completed
July 2027	Due Diligence Completed
August 2027	Final tender submission date
November 2027	Finalise Evaluation & Award Report Sign Off
November 2027	Board Sign Off of Award
December 2027	Ofwat Stage Gate 4 Approval – Gaining consent to enter into a CAP agreement

Date	Activity
January 2028	Issue Standstill Letters Mandatory 10 day period
January 2028	Standstill Concludes
January 2028	Issue contract notice
April 2028	Conform Contracts, Sign & Return completed
April 2028	Award Sign off
May 2028	CAP Mobilisation Commencement

Source: UU analysis

2.16 Manchester Ship Canal BOD Programme - proposed commercial model

- 2.16.1 As described in our 'DPC Overview' supplementary document, through our experience in working with Ofwat in developing and proposing regulatory and commercial mechanics on HARP, United Utilities understands that a standardised approach to the commercial and financial aspects of projects can be beneficial for potential bidders. At this early stage in the development of the MSC BOD programme, we remain committed to the development of a commercial model in line with Ofwat's guidance, with any exceptions informed by market engagement and on the basis of driving better value for money for customers.
- 2.16.2 We strongly believe in the principle of allocating risks to the parties best suited to manage them. Considering the early stage of DPC within the industry and drawing from our experience on HARP, we understand the current lack of familiarity in the market with the DPC model and risk allocation, and the need for this to inform the proposed risk allocation of new DPC schemes. As projects and engagement with the market develops, we will optimise risk allocation in line with findings to ensure our DPC procurement meets their expectations and will deliver best value for customers.
- 2.16.3 We have considered the contract principles and risks as prescribed by Ofwat within its DPC guidance and can confirm that our starting position is aligned with Ofwat's guidance, as set out in Table 5 below.

Table 5: Summary of position against Ofwat contract principles

Contract principles	Ofwat position	UUW position
CAP Charges	Agreement to set out CAP charges to be paid by the Appointee to the CAP for delivery of the DPC project. Payment mechanism to have regards to incentivisation mechanism	We agree with Ofwat guidance position and do not anticipate deviation. Design of payment mechanism to be refined through market engagement, recognising the potential for considerable complexity in this area.
Depreciation	CAP assets to depreciate over their useful life, meaning assets may not be fully depreciated over the period of CAP agreement	We agree with Ofwat's guidance position, noting that UU may consider the use of a defects regime as used on HARP
Indexation	Approach to indexation should secure best value for money for customers, considering nominal and index linked mechanisms. Should reflect elements of the DPC project revenue stream of whole project	We agree with Ofwat's guidance position, and will seek to develop an approach to indexation that will provide best value to customer using our own experience on HARP and with the benefit of market engagement.
Duration	Expect duration of DPC projects to be 25 – 40+ years. Appointees to consider optimal duration for their DPC project prior to commencement of procurement.	We agree with Ofwat's guidance position. We intend to test the appropriate contract duration with the market
Commencement of revenue stream	Appointees should seek the most appropriate approach relative to their DPC project which provides best value for customers	We agree with Ofwat's guidance position. We propose to test approaches with the market
Change of Control	CAP agreement should include provisions which require prior approval by the Appointee of any change of ownership or control.	We agree with Ofwat guidance position and do not anticipate deviation.
Land & planning strategy	Land and planning strategies should seek to deliver best value for customers. Land required for the delivery of the DPC project will be in the ownership and/or control of the appointee and not transferred to the CAP.	We agree with Ofwat guidance position and do not anticipate deviation.
Construction & asset delivery risks	Standard approach to risk allocation for construction risks in DPC projects	We agree with Ofwat's guidance position and believe that construction risks should be transferred to the party best placed to bear them. We proposed to refine our approach to risk allocation as the project matures and through further market engagement.
On time delivery	CAP will be accountable for completing works on time (subject to appointee delays). Customers will not take risk of late delivery unless an alternative approach provides better value for customers	We agree with Ofwat guidance position and do not anticipate deviation.
Cost overruns	Appointee, CAP and customers share risk of cost overruns through Target Cost model. Appointees must consider appropriate contract models which incentives CAP to deliver best value to customers.	We agree with Ofwat's guidance position as a starting point, noting the relevance of the principle of risks being allocated to the party best placed to manage the risk. We propose to test approaches and appropriate models with the market.

Contract principles	Ofwat position	UUW position
Site conditions	Appointees must develop a model for management of ground conditions that represents best value for customers, considering ground conditions, site characteristics & incentives to minimise costs. Any SI undertaken by the Appointee are capable of reliance by the CAP	We agree with Ofwat's guidance position. We propose to undertake necessary site condition investigations that can be relied upon for the purposes of mitigation of risk and expedited delivery.
Operational risks	In assigning operational risks, Appointees must look for an approach that will deliver best value for customers	As set out within our DPC suitability assessment, due to the characteristics of the project, we deem the risks associated with operations on this project to be too significant to transfer.
Financial risks	Appointees should develop and evidence finance solution which is likely to deliver best value to customers. Any benefits from post construction completion are to be shared with customers. The appointee should have right to request a refinance in terms of the CAP agreement.	We agree with Ofwat's guidance position. We propose to review our position further following market engagement.
Termination & Step-in rights	CAP agreements will run for the duration of the intended contract term. Agreements to have mechanisms to deal with termination, service failures and early termination	We agree with Ofwat's guidance position and do not anticipate deviation.
Legal, regulatory and other risks	Appointees remain responsible for complying with their statutory and licence responsibilities Appointee should consider and require CAP to consider way to maximise social & environmental value in the way the scheme is delivered CAP agreement must specify and oblige CAP of requirements to adhere to regulator's requirements Agreement to specify clearly who will own the assets throughout the term. CAP is expected to bear the risk of any unforeseen change in law during the construction phase. With appropriate change mechanism in the agreement to support.	We agree with Ofwat's guidance position and do not anticipate deviation.
Variability of revenue and payment mechanisms	Appointee must develop a suitable payment mechanism that reflects the key aspects of the DPC project and must consider each of the risk areas described in the guidance.	We agree with Ofwat's guidance position and intend to develop a payment mechanism which both aligns with the guidance and market engagement feedback, recognising the potential for considerable complexity in this area.

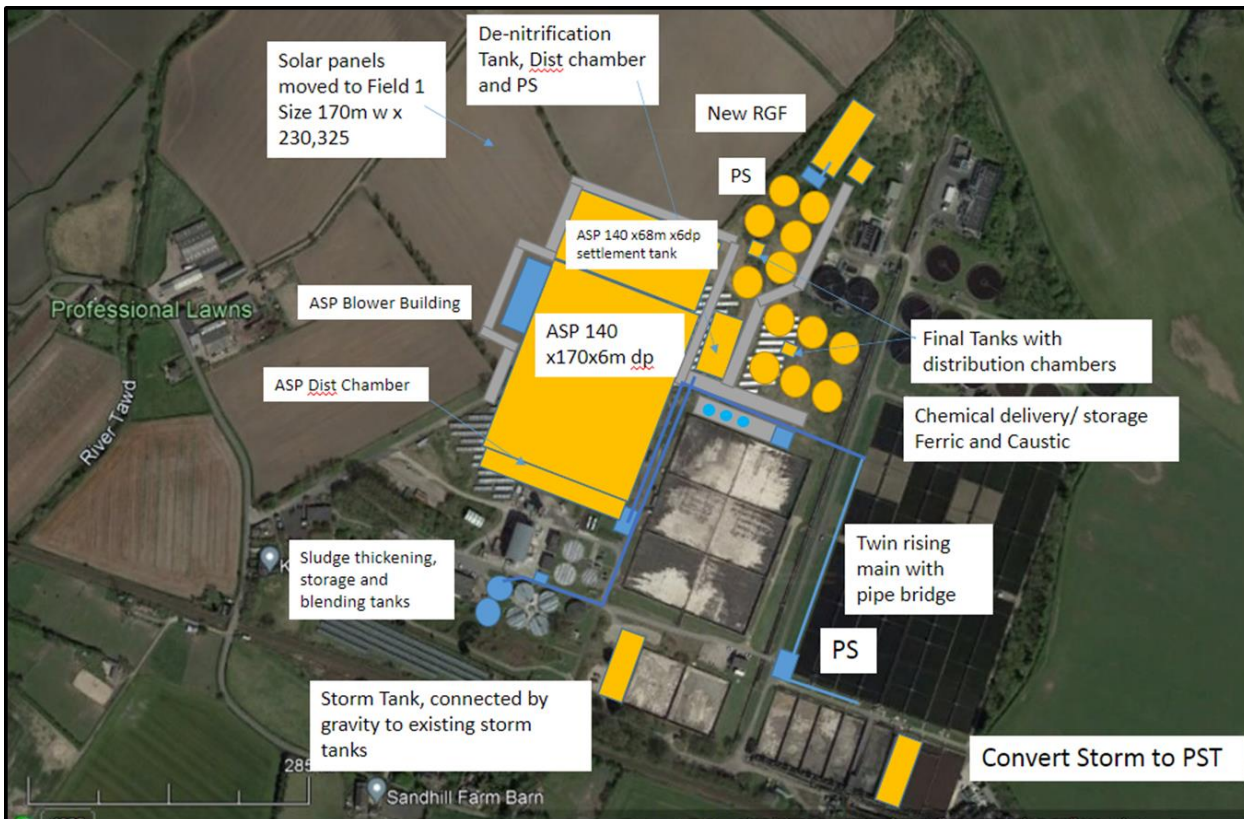
**STAGE 1 STRATEGIC CASE ASSESSMENT
WIGAN AND SKELMERSDALE**

3. Wigan WwTW & Skelmersdale WwTW

3.1 Scheme Overview

- 3.1.1 During the development of United Utilities' PR24 WINEP submission, one of our significant future AMP9 projects, Wigan WwTW & Skelmersdale WwTW has been identified as a suitable candidate DPC opportunity. While this scheme of works is in its early stages of development, we believe the value, construction profile and the substantial 'rebuild' nature of the solution makes it a viable proposition for a DPC delivery model.
- 3.1.2 At a high level, the scheme comprises the construction of a new WwTW at Wigan and the proposed eventual decommissioning of the WwTW at Skelmersdale. This will result in the combination of Wigan and Skelmersdale flows, including transferring Skelmersdale flows (downstream of the primary settlement tanks) over to Wigan and treating all flows on the Wigan WwTW site.
- 3.1.3 Within the options development process, a series of unconstrained options have been identified against a list of Generic High-Level Solution (GHLS) categories. The least cost and preferred option has been chosen on the basis that it meets the requirements, is technically feasible, deliverable and most importantly will ensure that we meet our regulatory obligations, and comprises:
- Wigan WwTW: refurbishment and increased capacity of the primary settlement stage, new biological phosphorus ASP, new final tanks and new rapid gravity filters (RGF). Sludge thickening and blending is also included to accommodate biological phosphorus sludge production.
 - Skelmersdale WwTW: refurbishment of the inlet works and primary settlement stage, installation of diversion pipework to a connection to an existing pipeline to Wigan WwTW. The effluent from Skelmersdale WwTW will join the Wigan effluent downstream of the primary settlement tanks.
- 3.1.4 The regulatory drivers set for AMP9, specifically comprise:
- WFD EnvAct - improvements to meet Good status in River Tawd (Phosphorus) - Wigan;
 - WFD - prevent deterioration 99th percentile FIS standard in River Tawd (Ammonia) – Wigan;
 - WFD EnvAct - improvements to meet Good status in Lower Douglas (Phosphorus) – Skelmersdale;
 - WFD EnvAct – storm tanks spills reduction - Wigan.
- 3.1.5 Figure 8 shows an aerial photograph of the current Wigan WwTW site with the proposed development overlaid (the storm tanks are not currently shown, as modelling is ongoing).

Figure 8: Wigan WwTW - Aerial photograph with proposed site layout superimposed



- 3.1.6 Throughout the period of assessment various high-level solutions have been considered including monitor and respond, operational intervention and replacement on a like for like basis but these were all discounted as being non-viable.

3.2 Programme Scalability Test

TEST: For individual projects or assets, is the sum of the whole life Totex for the single project or combined projects/assets proposed by a water company over one or more successive control periods less than £200m?

- 3.2.1 No, the whole life Totex value of the scheme is £617 million, exceeding the £200 million threshold and therefore passes the programme scalability test.

3.3 Technical Discreteness Assessment: Construction Risk Test

TEST: Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements?

- 3.3.1 Notwithstanding the early stage of solution development, we do not anticipate that any significant risks could not be transferred or contractualised with the CAP.

3.4 Technical Discreteness Assessment: Operations & Maintenance Risk Test

TEST: Is there any significant reason why the maintenance and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

- 3.4.1 Notwithstanding the early stage of solution development, due to the anticipated significant 're-build' solution we do not anticipate that any significant risks could not be transferred or contractualised with the CAP and would seek to commence targeted market engagement to re-affirm position.

3.5 Summary

- 3.5.1** While in the early stages of development, UUW firmly believes that due the characteristics of the Wigan WwTW and Skelmersdale WwTW scheme described above, that value for customers would be derived through the development of this project via a DPC delivery route. This project has AMP8 regulatory drivers which UUW has proposed to the Environment Agency are moved to AMP9. At present, the EA has not agreed to change the relevant regulatory dates and discussions are ongoing. On this basis, we have included the totex for this project in our AMP8 plan for BAU delivery, but not incorporated this into outputs, and identified a PCD that we intend to return the costs of delivery as an RCV adjustment (with the exception of costs to develop and procure the project under DPC) on the basis that we reach agreement with the EA to move the dates and proceed with a DPC procurement.
- 3.5.2** We propose that the scheme is developed/procured as DPC in AMP8 and delivered in AMP9, subject to the provision of an allowance for procurement and development costs and agreement by the EA to move the regulatory dates and allow delivery of this scheme as DPC in AMP9. This approach would allow us to accommodate longer DPC procurement activity and potential consideration for tender models with early contractor involvement. This scheme has the potential to be tendered as a DBFMO with an estimated totex value of £617 million.
- 3.5.3** The assessment is summarised in Table 4 below.

Table 6: Wigan WwTW and Skelmersdale WwTW: summary of assessment against PR24 requirements for delivery as DPC

Guidance	Outcome	Narrative
Programme scalability test	PASS	Whole life Totex value of the scheme is £617m, exceeding the £200m threshold and therefore passes the scalability test. Suitable for DPC
Construction risk test	PASS	At this early stage of development, there are no significant risks identified that would prohibit the use of DPC. Suitable for DPC
Operations & maintenance risk test	PASS	No, there are no significant reasons why most operations and maintenance risks could not be transferred to CAP. Suitable for DPC

Source: UU assessment

3.6 Proposed tender model

- 3.6.1** This scheme is in the early stages of development and should this be agreed for DPC delivery as described above, we would take the opportunity to fully use the additional time available to consider and develop proposed solutions further, undertake market engagement and open up the opportunity for consideration of all available tender models (including an early model) should the outputs dictate that early engagement would offer value for money for customers.
- 3.6.2** In determining a tender model that would provide best value to customers, we have sought to consider the programme's characteristics, internal versus external capability, market maturity, risk allocation and appetite, potential for innovation and timing.
- 3.6.3** While we recognise that the external market has both sufficient capability and maturity to support an early approach, we also see a lack of appetite within the market to adopt early project development risk. Notwithstanding the risk position, UUW plans to consider focused feedback from the market to

understand where an appropriate balance of UUW and CAP activities in upfront development activities would provide a best value outcome.

- 3.6.4 UUW is open to considering all possible tender models at this early stage for this project and will decide upon the most suitable model once the scheme has been further defined. While it is possible that the DPC market may mature together with perceptions of risk appetite, we will undertake in due course an assessment to measure internal v external capability and capacity against the requirements, once properly informed feedback has been received from the market.

3.7 Proposed programme plan

- 3.7.1 As set out above, we have proposed this project for AMP8 development and procurement and AMP9 delivery, subject to agreement with the EA. Subject to this being agreed, we will develop a programme plan aiming for contract award early in AMP9, with market engagement and procurement activities taking place in AMP8. Procurement and programme timescales will depend on the chosen tender model (early versus late), and we will aim to reflect learnings from both our existing HARP and proposed MSC BOD DPC programmes.

3.8 Proposed procurement timetable

- 3.8.1 Given that this scheme is in the early stages of development and that our request is for it to be designated as a DPC candidate for the commencement of substantive delivery in AMP9 and beyond, we will provide a high level procurement timetable closer to the proposed timing of the procurement. Subject to the need to reflect the choice of tender model (early vs late), we expect the procurement timetable to reflect learnings from both our existing HARP and proposed MSC BOD DPC procurement processes.

3.9 Proposed commercial model

- 3.9.1 As mentioned above, this scheme is in the early stages of development. Subject to being agreed for DPC delivery in AMP9, we would propose to develop the commercial model through AMP8, drawing on market engagement and our existing DPC experience. We would expect to use Ofwat's DPC guidance as the starting point for the commercial model, with any deviations informed by the specifics of this project, market engagement and in the pursuit of better value for money for customers.

**STAGE 1 STRATEGIC CASE ASSESSMENT
ECCLES WwTW**

4. Eccles WwTW

4.1 Scheme Overview

- 4.1.1 This scheme is an investment at an existing WwTW to achieve EA requirements on BOD and ammonia in final effluent. This site also needs to reduce BOD in the storm tank effluent. It includes significant new assets, asset refurbishment and subsequent maintenance. In addition, existing assets must be decommissioned to make way for the new plant. Figure 9 below shows an aerial photograph of the existing site and WwTW.
- 4.1.2 UUW will optimise interventions across its asset base to improve the dissolved oxygen (DO) levels within the Manchester Ship Canal. While currently our actions alone cannot meet the expectations for DO, we can make significant contributions towards the objective for DO. We will continue to model the best interventions and propose significant BOD reductions to the discharges from Davyhulme, Salford and Eccles as part of the MSC adaptive plan. Following investigation and modelling, we propose these interventions ahead of spill reduction interventions, as these are modelled to make the largest step change to the DO in the canal.
- 4.1.3 At Eccles WwTW UUW will specify Best Available Technique (BAT) solutions to meet BOD and Ammonia drivers. The scope includes delivery of Biological P removal ASP, new FSTs, new sludge pipeline, combined SAS thickening plant including poly dosing, new sludge treatment and new storm storage volume.
- 4.1.4 Within the options development process, a series of unconstrained options have been identified against a list of Generic High-Level Solution (GHLS) categories. Three options were considered:
- New Asset Option 1 - Integrated solution across asset boundaries such as process network boundary, process, Bioresources or catchment level solutions. An integrated solution is a systems thinking response and could be a combination of any of the above solution types.
 - Nature-Based Option 1 - New standard build Activated Sludge Process (ASP), new Final Tanks, alkalinity balancing, storm storage and sludge caking, an augmented open surface wetland.
 - New Asset Option 2 - Refurbished PSTs, New EBPR (BioP) ASP and new Final Tanks with inlet works modifications.
- 4.1.5 Among the two feasible alternatives proposed, the New Asset Option 2 was chosen as the least cost and preferred option on the basis that it meets the requirements, is technically feasible and is assessed as being deliverable – moreover, it will improve water quality and catchment resilience.
- 4.1.6 The Nature-Based Solution Option 1 was deemed to be undeliverable due to the lack of available land on or around the site for the area of wetland required.
- 4.1.7 New Asset Option 1 remains a viable alternative.

Figure 9: Eccles WwTW– Aerial photograph – Existing site layout



4.2 Programme Scalability Test

TEST: For individual projects or assets, is the sum of the whole life Totex for the single project or combined projects/assets proposed by a water company over one or more successive control periods less than £200m?

4.2.1 The whole life Totex value of £308 million is greater than £200 million threshold.

4.2.2 [✂]

]

4.3 Technical Discreteness Assessment: Construction Risk Test

TEST: Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements?

4.3.1 Yes, due to the risks associated with the aforementioned complex third party legal challenges, it is unlikely to be practicable nor provide value to the customer to transfer these risks to the CAP.

4.3.2 Notwithstanding this fundamental construction risk, the following risks have been identified which in our view cannot be mitigated through contractual or commercial arrangements, construction techniques or construction activity phasing:

- The CAP would be required to work within very close proximity to live assets on a site the footprint of which is small and substantially 100% utilised.
- The solution will require decommissioning of the existing biological trickling filters which take up a large percentage of the operational footprint of the site.
- The use of significant temporary treatment (up to 30 temporary SAF plants) will be necessary to manage the construction activities whilst maintaining permit compliance specifically during construction of the new Activated Sludge Plant (new secondary treatment process) which will be built over the existing trickling filters.

- 4.3.3 As summarised in the recently published market engagement by RAPID, respondents raised concerns about how much risk is passed onto the CAP. It is for the reasons set out above, that we have ascertained that the construction risks associated with this project are too significant for a CAP to bear.

4.4 Technical Discreteness Assessment: Operations and Maintenance Risk Test

TEST: Is there any significant reason why the maintenance and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

- 4.4.1 On the basis of the results of the programme scalability and construction risk tests, this test is not applicable as the scheme is not suitable for DPC.

4.5 Summary

- 4.5.1 Based on the outcome of the technical discreteness tests as set out above and summarised in Table 7 below, we conclude that this scheme is not suitable for DPC.

Table 7: Eccles WwTW: summary of assessment against PR24 requirements for delivery as DPC

Guidance	Outcome	Narrative
Programme scalability test	NOT SUITABLE	[✂]
Construction risk test	NOT SUITABLE	Yes, it is likely that significant risks associated with complex third party stakeholders could not be transferred to or contractualised with the CAP. There are also significant complexities around the constrained nature of the site and the close proximity and overlap between existing UU assets and the scope of this project. Not Suitable for DPC
Operations & maintenance risk test	N/A	Not applicable on the basis of the results of the programme scalability and construction risk tests.

Source: UU assessment

**STAGE 1 STRATEGIC CASE ASSESSMENT
DAVYHULME WwTW P REMOVAL**

5. Davyhulme WwTW P Removal

5.1 Scheme Overview

- 5.1.1 The Manchester Ship Canal downstream of UUW's largest Wastewater Treatment Works (WwTW) at Davyhulme has been subject to a deterioration in phosphate status from the WFD baseline. An AMP7 Water Industry National Environment Programme (WINEP) P limit was identified as being required at Davyhulme to address deterioration to 'Bad' chemical status in the Canal. A conventional chemical dosing solution of the scale required to meet the proposed phosphorus driver at Davyhulme WwTW was not considered sustainable due to the significant quantities of chemicals required for treatment, but also due to uncertainty on the sources of the increasing phosphorus load and impacts of on-going population growth on the phosphorus load received at Davyhulme WwTW.
- 5.1.2 UUW and the Environment Agency have worked together to develop a set of alternative measures to the proposed end of pipe P limit at Davyhulme based on the principles of catchment systems thinking (CaST). The alternative proposals look to reverse the phosphorus deterioration to 'Bad' status in the Manchester Ship Canal by delivering an equivalent catchment phosphorus load reduction to the end of pipe P limit at Davyhulme while also looking to provide a greater understanding of sources of phosphorus and catchment growth to inform more sustainable longer term phosphorus management strategy for Davyhulme WwTW and the Manchester Ship Canal.
- 5.1.3 In AMP7 the required catchment phosphorus load reduction has been delivered through a flexible catchment permitting approach which is set out in the Manchester Ship Canal Flexible Permitting for Phosphorus Operating Techniques Agreement (OTA). This will reverse the phosphorus deterioration in the Manchester Ship Canal and will also deliver local WFD improvements in the upstream catchments.
- 5.1.4 To supplement the AMP7 intervention, the start of the physical works at Davyhulme in AMP8 covers the construction and commissioning of a phosphorus recovery plant with potential removal capabilities of up to 1000 kg/d - this provides a process that breaks the cycle of phosphorus re-introduction, supporting increased sludge imports and the Bioresources adaptive plan. As a minimum this supports the no deterioration requirement that will introduce a permit limit of 3mg/l phosphorus. In addition, with available land at a premium, the demolition of redundant assets and ground preparation creates the space for new assets in time for key decision points.
- 5.1.5 Delivery of the Phosphorus Recovery Plant also contributes towards the Environment Act 80 per cent reduction target by 2037. The long-term plan considers the Environment Agency preference for "Bio P" solutions rather than "ferric dosing" chemical solutions which drives us down the recovery route in AMP8.
- 5.1.6 In addition, an AMP8 liquor treatment plant will be introduced working alongside the P recovery process to maintain performance of existing secondary treatment processes through improved ammonia management.
- 5.1.7 The new plant will be odour controlled and to facilitate the works a power upgrade to the site will be required.
- 5.1.8 Within the options development process, options were considered against a list of Generic High-Level Solution (GHLS) categories with only one viable option identified:
- New Asset Option 1 - Recovering phosphorus from site liquor returns which will reduce the amount discharged in final effluent.
- 5.1.9 The New Asset Option 1 was chosen as the least cost and preferred option on the basis that it meets the requirements, is technically feasible and is assessed as being deliverable, although land availability is restricted so phased construction will be required which will necessitate the extension of timescales. This option will lead to river water quality improvements with a notable reduction in phosphorus levels.

5.2 Programme scalability test

TEST: For individual projects or assets, is the sum of the whole life Totex for the single project or combined projects/assets proposed by a water company over one or more successive control periods less than £200m?

- 5.2.1 The full scope (including operations and maintenance) has a whole life cost of £401m. For the reasons set out against the operations and maintenance risk tests below, we consider that the risks associated with operations and operational maintenance cannot be effectively transferred to a CAP. As a result we have re-assessed the scalability test to consider capex and only the element of maintenance activity (life cycle maintenance) which has passed the operations and maintenance risk test. However, on this basis the whole life cost of the DPC potential scope is £107 million and therefore does not exceed the £200m DPC threshold.
- 5.2.2 Therefore, the result of the programme scalability test for Davyhulme WwTW P Removal is: Yes, the applicable whole life cost (totex) for the scheme is less than £200 million (£107 million).
- 5.2.3 Notwithstanding that the value of remaining scope sits below the DPC threshold, this project has a driver to prevent deterioration in water quality that is currently due in 2026. It would not be possible to achieve this tight timescale in anything other than an accelerated BAU delivery approach, and while UUW has asked the EA to move this date, the EA is not currently minded to agree.

5.3 Technical Discreteness Assessment: Construction Risk Test

TEST: Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements?

- 5.3.1 No: while a number of notable risks have been identified largely pertaining to constructability (working in proximity to live assets and interventions required across the treatment works) we believe these risks would exist regardless of delivery route, are not specific to DPC and therefore could be mitigated through construction techniques, phasing of activities and contractual mechanisms.

5.4 Technical Discreteness Assessment: Operations & Maintenance Risk Test

TEST: Is there any significant reason why the maintenance and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

- 5.4.1 We believe there are a number of significant reasons as to why the majority of the risks associated with operations and operational maintenance cannot be effectively transferred to the CAP. We do however consider the responsibility for “asset life cycle maintenance” (which is defined as discrete and planned, preventative maintenance activity) limited to assets that the CAP is involved with constructing or installing can be transferred to the CAP.
- 5.4.2 As set out above, our proposed AMP8 solution for Davyhulme WwTW P Recovery sits within an existing operational site. UUW is ultimately accountable as licence holder and operations must be undertaken within context of wider integrated system in which it operates, inclusive of any other assets that contribute to its control. The performance of wastewater treatment plans is contingent on all dependencies across all the different treatment processes over the site, this is not limited to the existing assets or those assets being constructed as part of the AMP8 solution. The risks associated with multi-point delivery are too significant and it would neither be practical for the CAP to be held accountable for operation of the assets it has constructed on this site or efficient for a site to have two operational teams.
- 5.4.3 Finally, market engagement on the HARP programme suggests that the market is reluctant to bear risks outside of the CAP’s control, which is likely to be the case in an operational existing WwTW with complex interfaces, as described above. This is also supported by recent market engagement published by RAPID. On this basis, and taken together with the arguments set out above, we believe the inclusion

of operations and operational maintenance within this DPC scheme would reduce its attractiveness to the market and the potential to generate value for money for customers.

5.5 Summary

5.5.1 Based on the outcome of the technical discreteness tests as set out above and summarised in Table 8 below, we conclude that this scheme is not suitable for DPC.

Table 8: Davyhulme WwTW P Removal: summary of assessment against PR24 requirements for delivery as DPC

Guidance	Outcome	Narrative
Programme scalability test	NOT SUITABLE	<p>This project currently has a regulatory driver to prevent deterioration in water quality due in 2026. It would not be possible to achieve this tight timescale in anything other than an accelerated BAU delivery approach, and while UUW has asked the EA to move this date, the EA is not currently minded to agree. Notwithstanding the difficulty of accommodating DPC delivery timescales, the operations and maintenance risk test for this scheme indicates a number of reasons why the risks associated with operations and operational maintenance cannot be transferred to the CAP. Rerunning the programme scalability test without this scope reduces whole life totex to £107m, below the £200m threshold.</p> <p>Not Suitable for DPC</p>
Construction risk test	SUITABLE	<p>No, risks associated with interactions, location of new assets and constructability would exist regardless of delivery route, are not specific to DPC and therefore could be mitigated through construction techniques, phasing of activities and contractual mechanisms.</p> <p>Suitable for DPC</p>
Operations & maintenance risk test	Partial	<p>No, while we consider that operations and operational maintenance risks are not transferable to the CAP, we do however consider the responsibility for “asset life cycle maintenance” (which is defined as discrete and planned, preventative maintenance activity) limited to assets that the CAP has constructed or installed being transferred to the CAP.</p> <p>Suitable for DPC</p>

Source: UU assessment

**STAGE 1 STRATEGIC CASE ASSESSMENT
WINEP HABITATS PROGRAMME (WASTE)**

6. WINEP Habitats Site Programme (waste)

6.1 Scheme Overview

- 6.1.1 We identified the wastewater aspects of the WINEP Habitats programme as a potential programme of work for consideration for DPC delivery due to similarities of project characteristics including relative proximity, composition and regulatory drivers. Specifically, the projects within the scheme are predominantly phosphorous removal programmes schemes on small rural sites within the north Cumbria region with a smaller number of infrastructure removal schemes
- 6.1.2 Similar to the Manchester Ship Canal bundle these projects present an opportunity to adopt a Catchment Systems Thinking (CaST) approach to delivery. There are opportunities for flexible permitting and catchment-based solutions with discussions already underway with the Environment Agency in this respect.
- 6.1.3 UU is committed to working in partnership with landowners, farmers, conservations and other third parties including local communities to create new habitats and restoring those requiring improvement or enhancement. This commitment is consistent with UU's Long Term Delivery Strategy, WRMP, DWMP and WINEP which, in part, are centred upon building, bigger, better and more connected spaces for nature.
- 6.1.4 Cumbria Connect is an example of such a scheme (albeit not delivered via DPC) which is currently underway where we are working very closely with the Endangered Landscapes Programme to help breathe new life into one of England's most cherished landscapes. The Cumbria Connect project partners include the RSPB, Lowther Estate, the Orton Fells Farm Cluster, local community groups, the local authority and Natural England.
- 6.1.5 Additionally, UUW piloted the first catchment flexible permit in England in the Petteril catchment which is in North Cumbria. This allowed us to deliver more efficiently and deliver wider environmental outcomes compared with a conventional grey solution.

6.2 Programme Scalability Test

TEST: For individual projects or assets, is the sum of the whole life Totex for the single project or combined projects/assets proposed by a water company over one or more successive control periods less than £200m?

- 6.2.1 The full whole life totex of the 18 projects initially identified as part of this programme is £357 million, which exceeds the £200 million DPC threshold and led to the shortlisting of the programme for stage 1 strategic case assessment.
- 6.2.2 However, for seven of the 18 projects with a value of £178 million whole life totex, timescales cannot accommodate a DPC delivery approach and the additional 18 to 30 months this adds to the process (as set out in *UUW52 - DPC overview*). These projects have nutrient neutrality drivers, and the specific requirements for which will be officially established in the forthcoming Levelling Up and Regeneration Bill. These identified schemes must be commenced promptly upon the enactment of the legislation, especially since development is restricted in all nutrient neutrality areas, impacting the Rivers Eden and part of the Derwent. These schemes play a vital role in reducing nutrient loading and, consequently, easing development restrictions. Delivery under DPC would prevent UUW from meeting these legislative requirements.
- 6.2.3 The remaining scope has a whole life totex of £178 million, and following the exclusion of two further projects (£24 million whole life totex) as a result of the construction risk test as set out below, the DPC potential scope is reduced to £154 million. On this basis, the programme does not pass the programme scalability test and therefore is not suitable for DPC.

6.3 Technical discreteness assessment: construction risk test

TEST: Is there any significant reason why most construction risks cannot be effectively transferred to the CAP and/or managed or mitigated through contractual arrangements?

- 6.3.1 No for seven projects with a value of £154 million whole life totex.
- 6.3.2 Two projects with a totex of £24 million have been excluded from the programme as there are significant reasons why construction risks cannot be effectively transferred to the CAP or managed contractually. These projects will be low cost and low tech and will require organisations with close relationships on the ground to work in partnership with multiple third parties (such as landowners, farmers, local communities and river trusts) to enable successful delivery. It is felt that adopting a DPC approach would likely prohibit or adversely impact some of the potential opportunities we are planning to explore across the catchment including the ability to harness these relationships.

6.4 Technical discreteness assessment: operations and maintenance risk test

TEST: Is there any significant reason why the maintenance and/or operations of the asset cannot be effectively transferred to the CAP and or managed or mitigated through contractual arrangements?

- 6.4.1 On the basis of the results of the programme scalability and construction risk tests, this test is not applicable as the scheme is not suitable for DPC.

6.5 Summary

- 6.5.1 Based on the outcome of the technical discreteness tests as set out above and summarised in Table 9 below, we conclude that this scheme is not suitable for DPC.

Table 9: WINEP Habitats site programme (waste): summary of assessment against PR24 requirements for delivery as DPC

Guidance	Outcome	Narrative
Programme scalability test	NOT SUITABLE	Following exclusion of scope on the basis of timescales (7 projects, £178.4m) Not Suitable for DPC
Construction risk test	Partial	Nine projects totalling £154.0m totex pass the construction risk test. Two projects totalling £24m do not pass the construction risk test as a result of flexible permitting requirements as set out above.
Operations and maintenance risk test	N/A	Not applicable

Source: UU assessment

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Water for the North West