Appendix

YKY54_DPC approach and assessment

[Redacted]

YorkshireWater

Contents

[Content in this document has been redacted due to it containing commercially sensitive information or in the interests of security]

1. PR24 DPC Schemes Phase 2: Validating Potential DPC Projects (Arup)

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ARUP

Yorkshire Water Services Ltd

PR24 DPC Schemes

Phase 2: Validating Potential DPC Projects

Final Report Issue

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Contents

Glossary of acronyms

AMP	Asset Management Plan (Ofwat's five-year regulatory period)
ARD	Allowed Revenue Direction
BAU	Business As Usual
BF	Build Finance contract
CAP	Competitively Appointed Provider
Capex	Capital Expenditure
CML	Customer Minutes Lost
CSO	Combined Sewer Overflow
DB	Design Build contract – see EPC
DBFM	Design Build Finance Maintain contract
DBFOM	Design Build Finance Operate Maintain contract
DBOM	Design Build Operate Maintain contract
Devex	Development Expenditure
DPC	Direct Procurement for Customers
dWRMP	Draft Water Resources Management Plan
EPC	Engineering Procurement Construction contract – see DB contract too
ESG	Environmental, Social and Governance
IRR	Internal Rate of Return
ML	Mega litre (1,000,000 litres)
NEC	New Engineering Contract (a company that produces template contracts)
NPV	Net Present Value
OBC	Outline Business Case
ODI	Outcome Delivery Incentive (set by Ofwat)
OFTO	Offshore Transmission Owner (a type of PPP for offshore wind transmission cables)
Opex	Operating Expenditure
PCD	Price Control Deliverable
PPP	Public Private Partnership
PQQ	Pre-Qualification Question
PR19 / PR24	Price Review 2019 / 2024
RAG	Red Amber Green
RAPID	Regulators' Alliance for Progressing Infrastructure Development
Repex	Replacement Expenditure
SIPR	Water Industry (Specified Infrastructure Projects) (English Undertakers) Regulations 2013
SOC	Strategic Outline Case
SuDS	Sustainable drainage systems
SRO	Strategic Resource Option
STW	Sewage Treatment Works (also known as Wastewater Treatment Works)
Totex	Total Expenditure
UDVRE	Upper Derwent Valley Reservoir Expansion
VfM	Value for Money
WACC	Weighted Average Cost of Capital
WINEP	Water Industry National Environment Programme
WSS	Water Supply Security
WTW	Water Treatment Works
WWTW	Wastewater Treatment Works

1 Executive Summary

1.1 Introduction

Yorkshire Water Services (YWS) employed Ove Arup & Partners (Arup) on a commission to determine which of its potential Price Review (PR24) investment projects are most suitable for Direct Procurement for Customers (DPC) contracts, with further explanation of what DPCs are in Section 2 of this report.

This is the second report issued to YWS (the 'Phase 2' report) which follows on from the Phase 1 report where we shortlisted six out of 18 potential projects as warranting further investigation. In Phase 2 we revalidated findings for four of the six projects with further discussions with YWS staff, and market tested the projects (on an anonymised basis) with construction companies and equity investors to assess their attractiveness. The Scope of Work for both Phases is set out in Section 2.

1.2 Findings

We have reviewed the four proposed projects being (a) the Water Industry National Environment Programme (WINEP) Storm Overflow reduction AMP8 Package, (b) [redacted] (WTW) and Transfer Main, (c) [redacted] and (d) Ilkley Wastewater Treatment Works (WWTW). On investigation, the AMP8 WINEP Storm Overflow reduction programme was found to comprise six sites of a suitable scale and discreteness which had a Total Expenditure (Totex) of £212m, whereas Storm Overflow schemes being identified for AMP9-10 were of a slightly larger scale and therefore in batches of 2-4 sites and potential greater suitability because time can be programmed to start the DPC procurement earlier. We have therefore reviewed three separate potential packages of overflow programmes for DPC suitability, focusing on large grey infrastructure (civil solutions) storm overflows sites that will be adjacent or close to Wastewater Treatment Works (WWTWs) to keep their operations as discrete as possible.

1.2.1 Summary of Market Engagement

Market engagement has been undertaken with a variety of Contractors and Investors who are associated with water and infrastructure projects. A full summary of the feedback provided can be found in Section 7.2, but the main highlights were:

- **Project appeal** – All projects appealed to one or more of the contractors or investors and no specific project was viewed more favourably overall.
- **Long term thinking** – Most parties consider a visible programme of multiple DPCs from YWS as more attractive than a one-off DPC. A consistent approach to contract terms would also encourage engagement.
- **Specification** – Most consultees prefer an output specification rather than a design specification to allow them to add value and differentiate themselves through greater innovation and efficiencies.
- **YWS assumed construction times** – Interviewees suggested that projects that will take more than five years to build would not be attractive. Commonly, under a DPC no money is paid to the DPC company until the project is successfully commissioned, although this could be negotiated. YWS has provided its anticipated construction timeframes for the projects, some of which are longer than this. It is recommended that YWS revisit these timings, where possible, from the perspective of a DPC company that will be very focused on building the facilities as quickly as possible.
- **Keep talking** – All consultees emphasised that visibility was important, so regular updates and market engagement will be key to building and maintaining interest in YWS's DPCs.

1.2.2 Summary of Ofwat Tests

Following the revalidation exercise with YWS specialists and market testing we updated our conclusions on which projects met the Ofwat DPC tests (which are described in Section 3.1).

The following projects are identified as potentially suitable for the DPC approach:

- WINEP – Storm Overflow reduction AMP9-10 Packages – Three potential bundles of 2-4 projects from the AMP 10 overflow programme could be selected;
- [redacted] (WTWs) and Transfer Main – This project includes a transfer main from the River Ouse to a new second greenfield [redacted] treatment works and a long transfer main to move this potable water to the South of YWS's supply areas;
- [redacted] – A new water treatment facility.

The following projects are considered potentially unsuitable for a DPC approach:

- WINEP – Storm Overflow reduction AMP8 Package – With the addition of further sites to the scope at a later stage in the process, this package meets the

£200m Ofwat Scalability Threshold with a Totex of £212m. The sites are all located within a 25km stretch of the east Yorkshire coast with the exception of Wetherby STW, which is located 75km inland. Even though the scheme is of suitable scale, the constraint regarding the 2030 delivery deadline remains and therefore this is considered potentially suitable if the programme can be reconciled.

- Ilkley WWTW – Components of this project meet the Ofwat tests, but the project is below the Scalability Threshold and crucially is subject to a regulatory compliance date of 2026 which requires work to begin in AMP7. However, WWTW projects like Ilkley could be considered for DPC if the construction timescales and dates for required delivery are suitable.

1.2.3 Summary of Value for Money findings

We devised a quantitative and qualitative Value for Money (VfM) methodology (explained in Section 6) that YWS will be able to utilise to assess the potential VfM of the projects in later gate stages. We performed an initial high-level VfM assessment using this framework to provide an indication of the potential likelihood and scale of VfM benefits to help inform the selection process at this stage. Using this methodology, the two water treatment projects, the Ilkley WWTW and the AMP9-10 Storm Overflow reduction projects all offer good VfM potential. In the case of Ilkley WWTW, this indicates that similar projects could be considered for DPC in the future if they pass the Ofwat tests and have deliverable timescales.

The WINEP AMP8 Storm Overflow reduction project offers more limited opportunities to deliver VfM as a DPC because (a) the tendering timescales for procuring DPCs will make completing all works by the 2030 deadline tight, (b) the Scarborough sites are physically constrained potentially leaving fewer technology and cost saving opportunities compared to YWS's standard Business As Usual (BAU) approach.

1.2.4 Summary of Ofwat Risk Allocation findings

Ofwat has defined a standard approach to risk allocation within a DPC structure which is explained in Section 5.1. Our market engagement indicated that the allocations were familiar and acceptable to most consultees and no significant reasons to deviate were raised.

Reviewing the specifics of the shortlisted projects has highlighted some potential variations from the Ofwat default risk positions that YWS may wish to explore further if it pursues a DPC approach:

- **Planning Risk** – The Ofwat default is that planning risk rests with YWS and the Customer. Prior to contract award outline planning permission will need to be secured by YWS, but to allow flexibility for innovation in design against an Output Specification some limited planning risk will need to be taken by the DPC company. Ensuring the outline planning permission is suitably wide should enable this flexibility in risk allocation and maintain the scope to innovate and add value.

- **Operational Performance Risk** – The Ofwat default is that operational performance risk rests with the Competitively Appointed Provider (CAP), as the DPC delivery company. This makes most sense in a Design Build Finance Operate Maintain (DBFOM) procurement. However, YWS may wish to retain operational control of the Stormwater Overflow projects and [redacted] water transfer main, due to interfaces with other assets making that project or components of that project more suitable for a Design Build Finance Maintain (DBFM) scheme, without operational risk transfer.

In most other cases there is no obvious reason to deviate from the Ofwat default risk allocations at this stage. However, further development of the schemes and associated payment mechanisms may identify risks that need to be clarified or allocated differently.

1.2.5 Tender Model

To help consider the amount of planning water companies should undertake before issuing a project to market, Ofwat has created four DPC options: Early, Late, Very Late and Split, described in Section 5.3.

For the four projects under consideration the Late Model is likely to be the most attractive, as YWS already has plans for where the two WTWs and pipeline routings, the Ilkley WWTW and the storm water overflows will be located. In some cases, land will already be owned by YWS, and where it does not the intention would be that YWS would acquire the land. As is common with output specification PPP schemes, the Client will obtain outline planning permission and the PPP company will then need to secure the final planning permission based on its designs. As explained above, by obtaining suitably flexible outline planning permission the CAP should be able to secure final approval, if it stays within the outline planning constraints.

1.3 Recommendation on DPC suitability and potential for value for money

Our conclusions on suitability for DPC are summarised in Figure 1 below. Market feedback suggested that there is a need for YWS to assess construction build periods.

Figure 1: Conclusions for DPC suitability and VfM potential

PROJECT	TOTEX (£M)	SUITABILITY FOR DPC (OFWAT TESTS)	TENDER MODEL	TYPE OF DPC	POSITIVE VFM POTENTIAL
[redacted] WTW	253	Suitable	Late	DBFOM for WTW DBFOM or possibly DBFM for raw and treated water interfaces	Good
WTW	355	Suitable	Late	DBFOM for WTW DBFOM or possibly DBFM for clean water transfer	Good
Storm Overflows – AMP9-10 Packages	207	Suitable	Late	DBFM/ DBFOM	Good
Ilkley WWTW	90	Unsuitable (below Scalability Threshold and delivery dates)	Late	DBFOM	Good
Storm Overflows – AMP8 Package	212	Potentially suitable if constraints regarding the 2030 deadline can be overcome	Late	DBFM/ DBFOM	More limited

2 Introduction

Yorkshire Water Services (YWS) employed Ove Arup & Partners (Arup) on a commission to determine which of its potential Price Review (PR24) investment projects are most suitable for Direct Procurement for Customers (DPC) contracts.

DPC is a new contract structure for UK water companies to complement their traditional procurement routes (Frameworks, Alliances, competitive tenders, etc.) and procure a complete solution where an asset is Designed, Built, Financed, Operated and Maintained (DBFOM) by a private company for many years before being '*sold*' back to the water company with a Residual Value payment. The company that delivers the DPC contract is called the Competitively Appointed Provider (CAP).

The rationale for DPCs is value can be achieved by getting bidders to design and finance projects, thereby incentivising innovative design, quick construction, and optimised operations. Having payments linked to annual delivery also incentivises consistent operation and maintenance of assets. Our work was split into two phases, Phase 1 and Phase 2.

2.1 Phase 1

For YWS identified PR24 investment projects, as defined in the Scope of Work below, we reviewed Ofwat's DPC methodologies and guidance and YWS own assessment of the technical characteristics of its identified projects to assess the suitability for 18 projects for DPC procurement.

Phase 1 Scope of Work

Our review consisted of the following activities:

- **Confirmation of DPC Assessment requirements:** review of Ofwat's methodology related to DPC.
- **Assessment Framework:** review and challenge of YWS framework for assessing the suitability of DPC projects. This required the development of a revised framework establishing a set of key technical and financial criteria.
- **Testing each project against the framework:** reviewed a summary of the features and characteristics of each project against the assessment framework criteria.
- **Value for money potential:** assessed candidate DPC projects in light of YWS existing procurement and contract principles and considered the qualitative potential for value for money opportunities that a DPC approach might enable.
- **Market appetite:** reviewed likely market appetite to each project both from a contractor and investor perspective and how the procurement model could impact this appetite.

To do this we interviewed YWS technical specialists to better understand the projects to come up with our independent view on the potential suitability of the 18 projects.

On 14 April 2023 we submitted our final report, '*YWS PR24 DPC Review: Shortlisting Potential DPC Schemes*' assessing the suitability of projects for DPC utilising Ofwat and HM Treasury methodologies. Out of 18 projects, which were labelled Projects A to R, six projects were identified as potential projects to progress with, namely:

- Project A: Installing c.1.3 million Smart Meters;
- Project E: River Water Quality Modelling;
- Project F: Water Industry National Environment Programme (WINEP) Storm Overflow Spill Reduction programme;
- Project P: A new river abstraction to a new (WTW) along with a transfer main to the South of YWS supply area;
- Project Q: A new river abstraction to a new [redacted] WTW along with other options;
- Project R: Ilkley Wastewater Treatment Works (WWTW) and pumping station to improve river bathing quality.

In coming to our conclusions, we started to assess the Value for Money (VfM) potential and used our professional judgement of the market appetite for a DPC scheme if delivered as a DPC from the perspective of investors and their supply chains.

2.2 Phase 2

Following the submission of our report, a YWS DPC Steering Board reviewed our findings and identified the same six projects as having the most potential for successful DPC procurement. Two projects (A) SMART Meters and (E) River Water Quality Monitoring are being investigated by another consultant YWS has employed.

Our Scope of Work listed overleaf comprises further analysis and synthesis of the four others we identified as potentially suitable for DPC. In the production of the Phase 2 report, we provide an additional level of clarity on the projects' suitability for DPC.

Phase 2 Scope of Work

Our review consisted of the following activities:

- **Revisit four of YWS shortlisted projects:** to assess their suitability for DPC procurement, namely:
  - Project F: WINEP: Storm Overflow Spill Reduction programme
  - Project P: WTW and transfer main to the South of YWS supply area
  - Project Q: WTW
  - Project R: Ilkley: WWTW and pumping equipment
- **Undertake more detailed interviews:** with the relevant YWS specialists and senior management, clarifying projects in more detail.
- **Revisit the Ofwat Technical Discreteness Consultation tests:** (Scalability, Construction Risk and Operations and Maintenance Risk), based on findings update our scoring in our Framework.
- **Revisit the Phase 1 Value for Money Tests:** Reflect on the Qualitative HM Treasury VfM tests and update and prepare a new VfM methodology.
- **Undertake Market Research:** to gather evidence of market appetite from construction and operational contractors and infrastructure investors.
- **Assess each project** against Ofwat's project lifecycle risk categories and advise on the appropriateness of a DPC.
- **Undertake an initial Value for Money (VfM) assessment:** using the criteria of Cost Efficiency, Innovation, Deliverability, Timing and Financing.

After validating the Phase 1 information, preparing a new high-level VfM methodology with quantitative and qualitative aspects and undertaking the early soft market testing exercise we conclude whether each project meets the Ofwat Technical Discreteness tests and offers good or limited VfM potential. We also comment on the most suitable DPC tender model for each project.

3 Summary of Phase 1 review findings

3.1 Review of Ofwat DPC Guidance

Ofwat summarised the funding principles for DPCs in its March 2023 **'Guidance for Appointees delivering DPC projects'** report as "*the costs of a DPC project will not be part of a Price Review but Ofwat will issue an Allowed Revenue Direction which will enable an Appointee to recover the costs payable to the CAP from customers. The CAP Agreements (and the Allowed Revenue Direction) are expected to be long term arrangements that will span multiple Price Review periods. The Appointee's costs of the project, primarily development costs, will be recoverable by the Appointee as part of a Price Review.*"[1]

Ofwat has wanted to increase the degree of competition in the water sector over the last several AMP periods. In Price Review 2019 (PR19), companies were required to assess the suitability of projects for DPC using three tests:

1. An expected size test: is the whole life total expenditure (Totex) of the project over £100 million?
2. A discreteness test: is the project is sufficiently discrete to enable a third party to deliver and operate?
3. A Value for money (VfM) assessment.

For PR24 Ofwat now wants water companies to adopt the Technical Discreteness Guidance summarised in Box 1. For the Phase 1 assignment we used Ofwat's February 2023 **'Technical discreteness consultation'** document.[2] Box 1 explains what is included in Ofwat's April 2023 final **'Direct Procurement for Customers – Technical discreteness guidance'** which supersedes the February 2023 consultation.[3] However, the two documents are virtually identical with the only differences being:

- Ofwat no longer requires a VfM assessment of delivery via DPC at the early stage in the DPC process, which does not have an impact on the technical discreteness tests;

Box 1: Ofwat Direct Procurement for Customers – Technical discreteness guidance

The Scalability test requires that the Totex of the project or bundle of projects over one or more control periods exceeds a £200m threshold. Further guidance is provided stating that bundling of projects should occur when there are similar construction requirements and/or risk profiles and if the work is repeatable.

For the Construction Risk test there are in practice two questions:

- Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated? An example is a constrained site where building works would interfere with existing operations resulting in difficulty to cost and pricing. This would make it unsuitable for DPC.
- Are there any construction risks that cannot be transferred and need to be retained by the water company? If too many risks need to be retained this will potentially reduce the cost effectiveness of a DPC. For example, if the CAP is to take on operations of an existing site, then it will be harder for a CAP to accurately price construction, operations and ongoing Replacement Expenditure (Repex) costs as surveys they may be allowed to undertake prior to bidding may not be able to pick up some latent defects.

Ofwat splits the Operations and Maintenance Risk into three questions:

- Are there restrictions on the transfer of regulatory obligations and if so, is there a restriction on the transfer of the functions to a third party?
- Similar to the Construction Risk test, are there significant operational interface issues that cannot be cost-effectively managed or mitigated?
- Can a CAP deliver required volume and quality outcomes? Currently most of YWS's construction work is built by third parties, and some operations are also provided by third parties. Therefore, the question is more about the confidence that a CAP can operate the facility to an appropriate standard.

[1] Ofgem. *Guidance for Appointees delivering DPC projects*. March 2023. p.7 (accessed here)
[2] Ofwat. *Technical discreteness consultation*. February 2023 (accessed here)
[3] Ofwat. *Direct Procurement for Customers – Technical discreteness guidance*. April 2023 (accessed here)

- further interpretation of the Scalability Threshold test;
- guidance that projects are not required to pass all three tests to move to its Stage 2 (Approach to Procurement Plans) of four Stages.

These differences do not impact on our approach in our Phase 2 assessment. Although a full VfM assessment is not deemed necessary or possible at this preliminary Stage 1 (Establishing the Strategic Case), as the VfM for consumers of a DPC being better than the in-house counterfactual or YWS's Business as Usual (BAU) is so critical proposing schemes that are likely to fail a later VfM assessment would not be an appropriate use of consumers money.

3.2 Phase 1 Analysis

Given the level of YWS knowledge of the projects at the time, the focus during Phase 1 was on assessing the qualitative attractiveness of projects to proceed as a DPC, rather than try to estimate actual cost savings of a DPC route versus YWS traditional procurement options.

To develop our Phase 1 evaluation, along with the Ofwat Technical Discreteness tests, we reviewed wider best practice guidance on the qualitative assessment of the suitability of different delivery routes. The main other document reviewed was Ofwat's March 2023. '**Guidance for Appointees delivering DPC projects'** and chapters which are relevant are summarised in Box 2[4].

Chapter 2 of our Phase 1 report provided a detailed summary of all Ofwat guidance. The same chapter also included a review of HM Treasury's November 2006 **'Value for Money Assessment Guidance'** which contains Government advice on how to assess Public Private Partnership (PPP) projects against other procurement routes[5]. In principle, the only significant difference between a PPP and a DPC is that a PPP is procured by a Public Sector entity, while a DPC is procured by a water company. Thus, the HM Treasury report was viewed as very relevant.

Box 2: Ofwat. Guidance for Appointees Delivering Projects

Chapter 3 of this document provides general information on the streamlined Ofwat approvals process for DPCs which requires four key submissions, notably Stage 1 (Establishing the Strategic Case); Stage 2 (Approach to procurement plans, outline of the commercial model and designation of the project); Stage 3 (Gaining consent to procure the project); and Stage 4 (Gaining consent to enter into a CAP Agreement).

Chapter 4 outlines the standard commercial and financial structure of the CAP agreements. It shows the tender models from its 2017 DPC Technical Review which is explained in Figure 8 on page 22. Furthermore, Ofwat has outlined the expected risk allocation in respect of development, operational, financial, legal, regulatory and other risks. This has been incorporated in our Phase 2 work in Section 5. Appendix 4 (Project Incentives: Commercial and Regulatory arrangements), referenced in this Chapter then explains how DPCs can be incentivised and discusses how an alliance with a CAP could be an effective way to keep overall costs to consumers low.

Chapter 5 explores the Value for Money assessment and the evaluation required. Ofwat requires water companies to compare a potential DPC solution (and other options) against a 'base case scenario'. To perform this analysis the Net Present Values (NPVs) over the lifetime of a DPC scheme are compared against the 'base case scenario'. Unless the DPC contract length and the economic lifespan of the asset are the same, a residual value and return to the water company needs to be included, as well as post-DPC operations and maintenance costs. Ofwat goes on to say that the model and assumptions need to follow Ofwat's standard modelling assumptions and information about costs of the 'base case scenario' drawing data from their own databases, market insight and intelligence from recent transactions. This information about cost savings assumptions will be particularly important for YWS as it approaches Ofwat's Stage 3 (Gaining consent to procure the project).

3.2.1 The lenses of the analysis

For the qualitative evaluation, we started with Ofwat's three technical tests in its February 2023 **'Technical discreteness consultation'** explained in Section 3.1 and added extra granularity with sub-questions.

To provide further precision to the ranking we adopted principles in HM Treasury's **'Value for Money Assessment Guidance'** described above and retained their three titles Viability, Desirability and Achievability. We supplemented the questions with additional criteria that became clear during the meetings with YWS personnel. Therefore, there are six groupings, shown in Figure 2 overleaf.

[4] Ofwat. *Guidance for Appointees delivering DPC projects.* March 2023 (accessed here)
[5] HM Treasury. Value for Money Assessment Guidance. November 2006 (accessed here)

Figure 2: Attractiveness Assessment Metrics

Ofwat Technical Discreteness Consultation	
Scalability test	• Is real Totex>£200m over the proposed DPC duration (default 25 years)? • If less than £200m, can projects be bundled into an aligned programme with a single payment mechanism?
Construction Risk test	• Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated? • Are there any construction risks that cannot be transferred and need to be retained?
Operations & Maintenance Risk test	• Are there restrictions on the transfer of regulatory obligations and if so, is there a restriction on the transfer of the functions to 3rd parties? • Are there significant customer/ stakeholder interface challenges that cannot be transferred? • Can a DPC deliver required volume and quality outcomes? • Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?

Qualitative HM Treasury Value for Money tests	
Viability	• Will there be sufficient scope definition by Draft Ofwat submission? • Prior to DPC procurement can a clear scope, measurable output specification and payment mechanism be defined? • Will the project/ programme transfer operations of existing assets? • Are there known potential large areas of material change during the DPC period that cannot be managed affordably through a contract variation? • Are there high levels of future technology risk or uncertainty?
Desirability	• Can a DPC manage whole life risks better than the traditional delivery method? • Is there scope for innovation in design / service (operations) provision to unlock value? • Will the project enable multi-AMP investment (spreading cost)?
Achievability	• Is there sufficient market interest and capacity for construction and delivery? • Is the project/ programme sufficiently attractive to investors? • How challenging will it be for YWS to procure and manage the project/ programme? • Timing of outcomes: Are the performance outputs required earlier than a DPC route could practically deliver (assumed 2 years)?

Key: The key deciding factors

The list has excluded any VfM financing cost advantage for DPCs compared to YWS regulated cost of capital, particularly as YWS has an S&P A- (negative outlook) credit rating. As a result of an unfavourable PR19 assessment by Ofwat, YWS took its case to the Competition and Markets Authority (CMA) which ruled that the 2.96% real cost of capital that Ofwat proposed was too low and 3.20% was the correct value. This is explained in the Competition and Markets Authority March 2021 report '**Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations: Final Report**'.

Market insight is there will not be any cases where a CAP will be able to secure a lower cost of finance than YWS, especially as YWS balance sheet means it will be able to manage the impact of one-off cost shocks more effectively than a CAP, who is just operating one or a few assets. Even if a CAP was able to highly leverage its project, given the risks CAPs will be responsible for they may not be able to secure a lower overall cost of capital.

3.2.2 The key considerations

The Ofwat Technical Discreteness tests give clarity in determining whether a project is suitable for DPC. In Figure 2 we highlighted in dark red rectangles five key considerations we suggested are more material, where a low score would be a strong signal that a DPC project may struggle to offer VfM above a standard competitively tendered EPC contract. Yet, we also acknowledge that all the other tests have a role.

The first test is whether the proposed project is either above £200m or whether it can be sensibly bundled in with other projects with a single payment mechanism. This downward limit is appropriate given the significant costs to YWS for running DPC procurements and attracting competitive bids.

The next two *('Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated?'* and *'Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?'*) are drawn from Ofwat's Technical Discreteness tests and are effectively the same question about the degree of interface during the construction and operations phase.

The fourth and fifth questions are *'Will the project/ programme transfer operations of existing assets?'* especially when the existing assets cannot easily be separated from operation of other assets, and '*Are there high levels of future technology risk or uncertainty"* which might make a long-term contract less appealing.

The selection of the five key criteria comes from our insight of advising on the structuring, financing and executing PPP projects, Offshore Transmission Owner

(OFTO) deals and other projects that align to the tenets of DPC. The five can be summarised as:

> " DPC type projects will achieve most Value for Money where a CAP is given an output specification for a large £200m+ new standalone asset with only one or two interface points (e.g. connections into YWS network) and has flexibility to optimise the whole life costs using known mature technologies. "

The opposite of this will be smaller projects with detailed design specifications that give little opportunity for creativity in minimising whole life costs, or where securing agreement on the condition of assets to be transferred to a DPC will be difficult, or where the scheme involves fast-changing technologies. When technologies are rapidly changing the likelihood a proposed solution being suitable for a long period of time will be low, yet the confines and strictures of a DPC contract make it difficult to competitively negotiate changes. There are numerous examples of PPPs projects where the inability to competitively negotiate change has caused subsequent problems.

3.3 The projects/ work packages that were considered for potential DPC

In the process of developing the PR24 submission, YWS identified packages of work which were to be considered for delivery via a DPC approach.

The make-up of these packages was varied, including:

- Packages consisting of a single project;
- Programmes of technically related projects with separate target outcomes;
- Programmes of technically distinct projects which contribute to a common target outcome;
- Programmes of technically distinct projects related by investment type, or driven by similar legislative pressures.

The packages are aligned with the PR24 reporting structure and were developed based on need, rather than being ideally formulated into DPC-favourable bundles. YWS suggested 14 different programme or projects in an initial assessment and then added on Project O Sewer Rehabilitation.

As well as the 15 we identified opportunities reshape some packages to extract a suitable project or programme of projects. This added three more onto the list, being subsets of other packages of projects.

A full list of the projects considered is covered in the Phase 1 report in Appendixes A to R.

3.4 Recommended ranking of suitability of packages

At the completion of Phase 1 a prioritised ranking of projects was delivered which identified four shortlisted projects that scored highest and also passed the five 'key considerations'. These are shown in Figure 3. The next grouping of projects with potential to be suitable. These are shown in Figure 4. Although Ofwat's April 2023 final guidance states that all three technical discreteness tests do not need to be met to be designated as a potential DPC, we believe projects that meet all their technical tests and score highly on VfM will be better candidates for DPC.

Figure 3: Arup Shortlisted Projects

	Project	Score	Comments
P	[redacted] WTW	86	Suits DPC, however, there remains uncertainty about whether this scheme will definitely happen, and whether or not the WTW at will be upgraded or a new facility built (the latter particularly favouring a DPC route).
Q	[redacted]	85	Five [redacted] major capital investment options were presented. For costing we selected one of the most expensive options, but it is unclear if the capital works were repairs or upgrades to the existing WTW or a new WTW. The latter favours a DPC route.
A	Smart Meters	81	Potential DPC. Value for Money will be a consideration, depending on other procurement options that may be available.
E	River Water Quality Monitoring	73	There is some concern regarding the market deliverability of this scheme. However, conceptually, it is considered discrete enough to be a DPC.

Figure 4: Arup Projects Identified as Less Suitable but with Potential

	Project	Score	Comments
R	Ilkley: WWTW	74	This project has been extracted from project K: Draft Water Resources Management Plan (dWRMP) as a standalone project and is a candidate for DPC. However, it does not achieve the scale required and we do not believe that there is anything suitable to bundle it with. Further, there are questions about whether there is any flexibility with the Environment Agency's Bathing Water designation date, understood to be 2026/27.
F	WINEP: Storm Overflow Spill Reduction	68	With Phase 1 Report Totex at £638m it is of suitable scale, but as presented with 200+ sites it is not suitable for a DPC. However, there may be opportunities to focus on the larger sites that are either geographically close or have the same characteristics and prepare a smaller c.£200m package that could be a DPC with the remainder being procured through YWS's conventional routes.

4 Validating the shortlisted schemes

4.1 Shortlist

Of the six projects identified in Figure 3 and Figure 4, YWS confirmed that four projects should be reviewed in the Arup Phase 2 analysis:

1. Project F: WINEP – Storm Overflow reduction – Storm water storage facilities at multiple sites on the sewer network to protect the environment.
2. Project P: Water Treatment Works and Transfer Main – A new WTW and treated water transfer main to help with regional water distribution.
3. Project Q: [redacted] Water Treatment Works – A new large WTW to improve local water supply resilience.
4. Project R: Ilkley Wastewater Treatment Works– A new WWTW and transfer sewer to improve capacity and treatment quality.

The remaining two shortlisted projects, Smart Meters and River Water Quality Monitoring are also being explored by YWS for delivery by DPC as a separate piece of work.

4.2 Validation process

At the start of this assignment more information was gathered from YWS specialists about the four identified potential projects to better understand the drivers behind the investments, the risks and opportunities involved, and the potential costs and assumptions included in the build-up. The validation process included:

- Clarifying the projects in more detail and in some cases specific sites that could form part of a package of works;
- Revisiting the Ofwat Technical Discreteness Consultation tests (Scalability, Construction Risk and Operations and Maintenance Risk).

As a result of the discussions some Capital Expenditure (Capex), Replacement Expenditure (Repex) and Operating Expenditure (Opex) figures were changed. Information on Development Expenditure (Devex) was also requested, but due to the way costs are generated for the PR24 process these are not reported. Thus, a generic assumption was made that Design costs are c.10% of the total Capex costs.

The costs for YWS to develop the project for delivery by DPC, run the DPC procurement and then manage the CAP over the 25-year concession were estimated later, and have been assumed to be 3% on top of Totex values reported here. It is assumed 2% is incurred during the DPC development and procurement phase, and 1% incurred managing the CAP over the 25-year concession.

As a result of the discussions some changes were identified to the sites included within the DPC packages. Where the changes or additional information affected the Phase 1 Ofwat test scores these have been noted and the reasoning behind the changes explained in the relevant Appendix 1, 1A, 2, 3 and 4. A summary of the updated scoring is included in Appendix 6.

In Phase 1, to support the initial sifting of projects, as explained in Section 3.2.1 we developed a high qualitative level approach for assessment of VfM based on the three Qualitative HM Treasury VfM criteria (Viability, Desirability and Achievability). For Phase 2 we have begun to build a framework for a combined qualitative and quantitative VfM assessment and have performed an initial high-level review using this framework to revisit and further validate the initial VfM assessments of the four projects.

4.3 Results from the validation exercise

4.3.1 Project F: WINEP – Storm Overflow reduction

In the validation stage, the detail of the programme was explored, and a list of the most suitable projects identified using four constraints agreed with the YWS specialists:

1. The solution proposed was based on **grey infrastructure** (i.e. civil solutions) and not blue green drainage solutions such as swales or permeable pavements. The Phase 1 assessment of the blue green solutions for the Living with Water Programme identified that the level of customer and partner interfaces in such schemes are not suitable for DPC.
2. Required **storage volume >5,000m^3**, ensuring only the large individual sites are included as previous assessment indicated that a bundle of many small sites entailed too many construction and operational interfaces, and a small number of larger sites was more suitable for DPC.
3. The **sites are located at the end of a catchment** i.e. on or close to the treatment works. This is to reduce the operational interfaces associated with complex upstream and downstream interactions within the remote sewer network.

4. Storm overflow sites associated with the **Ilkley WWTW were excluded** because they have a regulatory deadline requiring completion in 2026 so the timescales are not suitable for DPC.

An initial 211 AMP8 schemes, largely comprised of the smallest Combined Sewer Overflow (CSO) sites, were assessed against the four constraints above. From this initial batch, four sites were deemed to meet the above criteria – Corner Café CSO, Toll House Stormwater Overflow, Scalby Ness Outfall (Scalby Mills), and Wetherby STW. In July 2023 an extra 27 AMP8 sites were released by YWS, bringing the total number of sites to 238. Using the same assessment criteria two of these – Bridlington STW and Scarborough STW were deemed to be suitable, which brings the AMP8 Totex to a final figure of £212m.

To further understand the potential for DPC from the storm overflow programme, the AMP9 and 10 programmes were reviewed to identify any additional sites that met the constraints listed above. Potential combinations of schemes have been identified for consideration as DPC packages, based upon bundles of 2-4 sites with a combined Totex value of around £200m. As well as the AMP8 package this resulted in consideration of three more potential DPC packages, making four in total:

1. AMP8 Package – 6 sites, Totex £212m
2. AMP9-10 Package 1 – 2 sites, Totex £207m (called the Lundwood Batch)
3. AMP9-10 Package 2 – 2 sites, Totex £197m
4. AMP9-10 Package 3 – 4 sites, Totex £201m

All the schemes identified for the AMP9-10 packages are currently listed in the AMP10 programme. A full description of the sites included in each package and the scores assigned against each of the tests is provided in Appendix 1 for the AMP8 package and Appendix 1A for the AMP9-10 Packages.

Further work to define these schemes is required for both the AMP8 solutions and the longer-term options to identify if the storage volumes at the locations are possible and consider what land ownership and planning considerations each site will require.

4.3.2 Project P: [redacted]

This package is the construction of a new WTW and a new transfer main to deliver treated water to South Yorkshire. This work is being considered as part of the draft Water Resources Management Plan (dWRMP) and forms part of the wider review of the Upper Derwent Valley Expansion Strategic Resource Options (UDVRE SRO).

This project is not guaranteed to go ahead as it is only one option in the UDVRE SRO, but initial discussions indicate it is quite likely this scheme forms part of the solution.

The WTW is intended to be a greenfield development which ensures discreteness for that element of the works and requires land purchase. A planning strategy would need developing with outline planning obtained by YWS as a minimum prior to DPC. The outline planning permission would need to be suitably defined to allow the CAP to develop the final design within the constraints of the outline planning and secure final planning permission.

The validation discussions identified that there are still multiple options being considered for the transfer main route, including single or dual main solutions and different routes with potential for greater interconnections to the existing YWS water supply grid. There are also differing opinions within YWS about the target completion date for the WTW varying from 2030 to 2035. Key considerations for determining the timescales a DPC would be required to deliver to appear to be:

1. What drives the 2030 deadline mentioned in the dWRMP and is there any flexibility within that date?
2. Is this timescale achievable by conventional procurement routes and / or DPC?
3. Could alternative measures bridge the gap between desired benefits and expected delivery date?

Further work is required to confirm the principal drivers, the most suitable solution and the delivery timescales.

4.3.3 Project Q: [redacted] Water Treatment Works

This package was a potential combination of two projects to provide a new abstraction and raw water main from [redacted] [redacted] WTW and a new 75MLD WTW plus additional treated water storage nearby. The new abstraction and raw water main element has now been removed and the scope limited to the WTW and storage facilities.

The works are intended to be a greenfield development to allow for discrete construction and operation. Land purchase is required. A planning strategy would need developing with outline planning obtained by YWS as a minimum prior to DPC. The outline planning permission would need to be suitably defined to allow the CAP to develop the final design within the constraints of the outline planning and secure final planning permission.

The abstraction is included in the dWRMP and the new WTW is one of the options associated with Water Supply Security (WSS) Resilience Strategy. It is not guaranteed

that this project will go ahead, as it is one of several options being considered to increase overall resilience of the water network in the Bradford area.

Further work is required to confirm the value offered by this option and confirm if this solution is being included in the investment strategy.

4.3.4 Project R: Ilkley WWTW

This is a potential project to replace Ilkley and Burley WWTWs with a single new treatment works adjacent to the Burley WWTW site and a new transfer sewer. The new WWTW would have increased capacity to accommodate storm return flows and increased treatment standards to reduce nutrient discharge. The proposed solution is for construction on land already owned by YWS. Planning risk and impact on procurement will be similar to [redacted]

This solution is related to the bathing water designation at Ilkley and although the project itself is quite discrete, it forms an integral part of the programme of works needed to achieve the river water quality targets.

Timescales are a significant challenge for this scheme. Discussions with the YWS specialists confirmed that without delivery of WWTW upgrades or replacement by 2026, the Bathing Water objectives could not be achieved. This means that the planning, design and construction are all expected to start in AMP7 and accelerator funding has been approved to facilitate this. Moving to a DPC delivery would mean waiting until PR24 is approved before anything could progress which would put the delivery deadlines at risk.

4.4 Changes to Phase 1 Assessment

The result of the validation exercise against the Ofwat tests are explained below. The updated scores are shown in Figure 5 overleaf.

4.4.1 Project F: WINEP – Storm Overflow reduction

Original AMP8 package

- Ofwat Scalability Test: Due to the reduction in number of schemes included in this package to six, the validated Totex figures for the AMP8 project package totals £212m, which is above the Ofwat scalability threshold of £200m.
- Ofwat Construction Test: To achieve a greater level of construction discreteness the AMP8 programme has reduced the number of schemes, however the sites included are mostly complex and high profile.
- Ofwat Operations and Maintenance Risk Test: The reduced number of schemes in the AMP8 project package, reduces the number of operational interfaces.

Overall, the score for this project in AMP8 has increased by 1 point.

AMP9-10 packages

- Ofwat Scalability Test: two of the three proposed AMP9-10 options meet the Ofwat scalability threshold of £200m. Package 2 falls just short of the Ofwat threshold by c.£3m.
- Ofwat Construction Test: To achieve a greater level of construction discreteness the projects selected from the AMP9-10 project package are the largest and most discrete elements.
- Ofwat Operations and Maintenance Risk Test: Having a smaller number of larger, discrete schemes in the AMP9-10 packages reduces the number of operational interfaces.

As we did not review this package in Phase 1, the score for this project in AMP9/10 is new.

4.4.2 Project P: [redacted] and Transfer Main

- Ofwat Scalability Test: Totex estimate now includes the full Capex and Opex costs of the dual transfer main option, updated in line with latest UDVRE SRO solution developments.
- Ofwat Operations and Maintenance Risk Test: Stakeholder interfaces to be retained by YWS include land purchase for WTW and abstraction, access agreements and easements for raw water transfer, abstraction licence, discharge consents and environmental approvals. If only outline planning is obtained prior to DPC then some planning risk is shared with the CAP, and the procurement will need to be structured to account for this.

Overall, the score for this project has decreased by 1 point.

Figure 5: Validation Exercise Summary (Including changes)

	Project	Phase 1 Totex (£m)	Phase 2 Totex (£m)	Suitable for DPC	Comments	Phase 1 Ofwat score	Phase 2 Ofwat score	Change
Q		367	253	✓	May suit YWS to include operations of the WTW in DPC but retain responsibility for the raw water and treated water connections (potentially including storage) as part of the wider water management activities. (Cost reduced from Phase 1 due to removal of River Aire Abstraction).	35	36	+1
P		228	355	✓	May suit YWS to include operations of the WTW in DPC but retain responsibility for the transfer main as part of the grid operations	36	35	-1
F(A)	Storm Overflows – AMP9-10 Packages	-	207	✓	May suit YWS to keep Operations in house but include maintenance for complex below ground access. Three possible AMP9-10 packages have been suggested, with Totex ranges from £197m - £207m. As the differences in Totex values are so small, the value provided throughout this report is that of the Lundwood Batch as explained in Appendix 1A.	N/A	33	N/A
R	Ilkley WWTW	131	90	X	There is a regulatory deadline of 2026 to complete the project which requires project start in AMP7. The Totex is below the Scalability Threshold, but it is the regulatory deadline that makes a DPC unsuitable. Future projects of this type in the AMP9-10 programme should be considered for DPC.	30	30	N/A
F	Storm Overflows – AMP8 Package	638	212	Potentially suitable , if constraints are addressed	May suit YWS to keep Operations in house but include maintenance for complex below ground access. There are two factors that constrain the AMP8 package's suitability for DPC: (a) the tendering timescales for procuring DPCs will make completing all works by the 2030 deadline tight, (b) the Scarborough sites are physically constrained potentially leaving fewer technology and cost saving opportunities compared to YWS's standard Business As Usual (BAU) approach	29	30	+1

4.4.3 Project Q: [redacted] Water Treatment Works

- Ofwat Scalability Test: Totex estimate updated by YWS, removal of .
- Ofwat Construction Test: For offsite options then YWS would need to buy the land in advance of the DPC, aside from this there are few construction risks that could not be transferred.

Overall, the score for this project has increased by 1 point.

4.4.4 Project R: Ilkley Wastewater Treatment Works

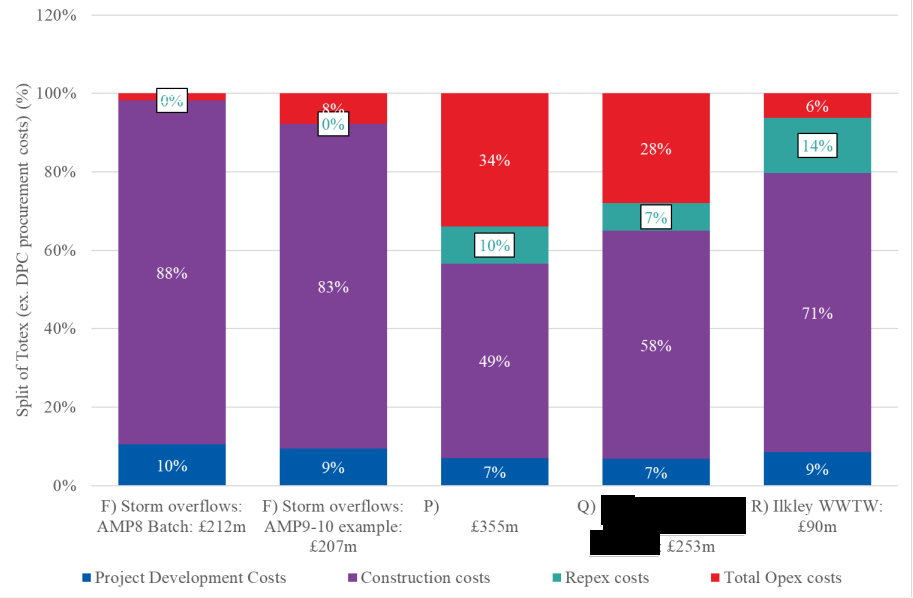
- Ofwat Scalability Test: Totex estimate adjusted to be based upon the smaller of the two options being considered.

Overall, the score for this project has not changed. However, the project is unsuitable for DPC due to the scalability and timeline for delivery.

4.4.5 Breakdown of Totex costs over DPC asset lifespan

Figure 6 shows the estimated breakdown of Totex costs for the four shortlisted projects. This highlights that the operating costs for and Ilkley WWTW are material which raises questions about the merit of fixing these at contract signature, as opposed to potentially introducing some market testing, benchmarking or for electricity and chemical prices possibly linking to reputable cost indexes. This is explained in Appendix 7: Ofwat DPC Risk Allocation.

Figure 6: Split of Totex costs over DPC lifespan (assumed 25 years of operations)*



* These Totex figures exclude the AMP8 DPC related costs (£m) (which Ofwat labels SUP12.14) which are the costs that will be incurred by YWS to develop the project for DPC delivery, run the DPC procurement process and then manage the CAP

5 Risk allocations and tender model options

The balance of risk within any contract has significant impacts on both costs to the client and the attractiveness to potential contractors and investors. To identify if projects are suitable for a DPC delivery, the ability to apportion risk in a manner which fits the type of contract and delivery mechanisms is important. Best value is achieved where risks are allocated to the party best able to manage them. Allocating risks to contractors which they cannot effectively mitigate or manage typically results in excessive risk premiums in bids. Following guidance from Ofwat's **'DPC Guidance for Appointees delivering DPC projects'** March 2023 publication, the shortlisted projects have been reviewed against the Ofwat default risk allocations and any key risk areas or potential for deviation from the default positions have been identified.

The risk allocation is used to help determine what may be the most appropriate DPC tender model for each project.

5.1 Ofwat's risk allocation process

Ofwat has prepared a standard risk allocation framework where decisions need to be made on which party or parties should be responsible for managing each risk. Risks are to be shared between the CAP, the Appointee (i.e. YWS) or customers, with allocation to the party who is best able to manage each specific risk.

5.1.1 Rationale to allocate risks between CAP, Appointee and Customers

As part of the AMP8 package Ofwat will award YWS is expected to manage cost overruns within its total budget by offsetting overruns with efficiencies made elsewhere. Whilst Ofgem, the electricity regulator, allows distribution and transmission network operators to come back to them to claim for reasonably incurred additional costs through its 'Reopener' process, Ofwat does not have such a system[6].

With DPCs Ofwat has introduced the possibility that in some circumstances cost variations may potentially be passed through to customers. The rationale is that a DPC is like an outsourced contract and whilst there may be cases where it is responsible for cost overruns, in most cases it will not be responsible yet there are few ways for it to benefit if the CAP ends up making more money than anticipated.

Ofwat have introduced two categories of cost variations. These are explained in Ofwat's 2020 '**Appendix 4: Guidance on Allowed Revenue Direction'** report[7]:

- **Compensation Event**: Compensation events that arise due to no fault circumstances (these are the equivalents of supervening events), e.g. an unforeseeable change in relevant law or standards.
- **Change Event**: changes that are not compensation events.

If the issue is deemed a Compensation Event, then the cost will automatically be passed onto the Customer. For change events Ofwat can opine on the case and decide whether the cost should be borne by the Customer or the Appointee.

5.1.2 Ofwat's five risk headings

The Ofwat standard framework for risk assessment considers five major risk headings as shown in Figure 7 overleaf.

i. Development Risks

ii. Construction and Asset Delivery Risks

iii. Operational Risks

iv. Financial Risks

v. Legal, Regulatory and Other Risks

These categories are broken into subcategories and the Ofwat default position for each risk are explained in the same Figure. A more complete description of each risk category is included in Appendix 7: Ofwat DPC Risk Allocation.

[6] Ofgem. *Reopener Guidance and Application Requirements Document*. February 2023 (accessed here)

[7] Ofwat. Appendix 4: Guidance on Allowed Revenue Direction. July 2020 (accessed here)

Figure 7: Ofwat's default allocation of DPC risks

		Ofwat recommended
Development Stage		
-	Planning	YWS / 👤
-	Land	YWS / 👤
-	Other Consents	YWS / 👤
Construction and asset delivery		
-	On-time Delivery	YWS / CAP
-	Cost Overruns	YWS / 👤 / CAP
-	Site Conditions	CAP
-	Works Information	YWS
-	Detailed Design	CAP
-	Third Parties	YWS / CAP
-	Changes in Scope	YWS / 👤
-	Interfaces with Appointee's Existing Assets	YWS
-	Commissioning	CAP
Operational		
-	Cost (Opex and Maintenance)	CAP
-	Operational Performance	CAP
-	Compliance with Statutory and Regulatory Obligations Which Impact the Scope of the Project	YWS / CAP
-	Defects During Operations	YWS / CAP
-	Demand Risk	YWS / 👤
-	Over-utilisation	YWS / 👤
-	Change in Scope	YWS / 👤
-	Value Testing	👤 / CAP
-	Condition of Asset/ Hand Back Risk	CAP
Financial		
-	Financing costs	👤 / CAP
-	Refinancing gains	👤 / CAP
-	Customer bad debt	CAP
Legal		
-	Specific laws relating just to DPC projects or water sector	👤
-	General change of law	CAP

Key: 👤 Customer | YWS Yorkshire Water | CAP CAP contractor

5.2 Risk allocation assessment

For each potential DPC on the shortlist we have reviewed the risks in line with the Ofwat default allocations. Our assessment is based upon professional experience, feedback from YWS specialist teams and market engagement. Based on our understanding of the projects, our default position is to accept the Ofwat risk allocations unless a project specific reason has been identified through these discussions. Nevertheless, as these projects are in the early stages of development, the risk allocations may potentially change as the projects evolve and are progressed through Ofwat's DPC submission stages.

5.2.1 Project F: WINEP – Storm Overflow reduction

During the validation discussions a revised package of projects was selected from the Storm Overflow programme (see Appendix 1A: F) WINEP: Storm Overflow Spill reduction AMP 9-10 Package) based on projects which met the three selection criteria outlined in Section 4.3.1.

The AMP9-10 projects are at a particularly early stage and the solutions are based on high level sewer modelling outputs of required storage volumes at each location. These have not yet been reviewed for practicality or deliverability. Further work will be done to confirm notional solutions, identify operational boundaries and interfaces and agree a suitable mechanism for payment and interaction between CAP and YWS assets.

Due to the integrated nature of storm overflows, it is possible that YWS could consider a DBFM option rather than DBFOM due to the low Opex components of the projects, and the potential advantages of keeping overall sewer network asset operation under one entity. If this were the case operational performance risk would be allocated at least in part to YWS (with standard allowance for defects liability).

All other risks would be as per the Ofwat default.

5.2.2 Project P: [redacted] and Transfer Main

A new greenfield WTW and a long-distance transfer main both entail risks associated with land ownership, legal rights to access and planning, which rest with YWS and would need to be considered in advance of any DPC.

Whilst the Ofwat Site Conditions default is for this risk to be borne by the CAP, there may be some benefit to sharing site condition risk for the c.90km transfer main to the South of YWS supply area to gain a more favourable DPC pricing or level of contractor interest. This will be especially the case if there is no way for the bidders to access the

route and there is uncertainty around contaminated land, waterlogging, access routes, etc..

Hence, it is possible that YWS would consider a DBFOM for the WTW, and a DBFOM or DBFM for the transfer main as YWS may need responsibility for enabling full flexibility and coordination within the wider water supply network.

Depending on the relative proportion of Opex costs to the Annual CAP payment market consultations identified a potential desire for some operational costs (e.g. electricity or chemicals) to be open to market testing, benchmarking or linking to reputable cost indexes. This makes sense as it is impossible to accurately predict the future price of such items and therefore attracts significant risk premiums.

All other risks would be as per the Ofwat default.

5.2.3 Project Q: [redacted]

The solution development for [redacted] is at outline stage, with notional capacity and sizing but no firm locations or footprints. A new greenfield WTW entails risks associated with land ownership, legal rights to access and planning, which rest with YWS and would need to be considered in advance of any DPC.

It is possible that YWS would consider a partial DBFOM, where the operation and maintenance of the WTW is retained by the CAP, but interfaces on the raw water and treated water (potentially including the storage) are YWS's responsibility to enable full flexibility and coordination of interfaces between the existing and new [redacted] and the wider network (i.e. a DBFM).

There may be a need for some operational costs (e.g. electricity or chemicals) to be open to market testing or benchmarking. All other risks would be as per the Ofwat default.

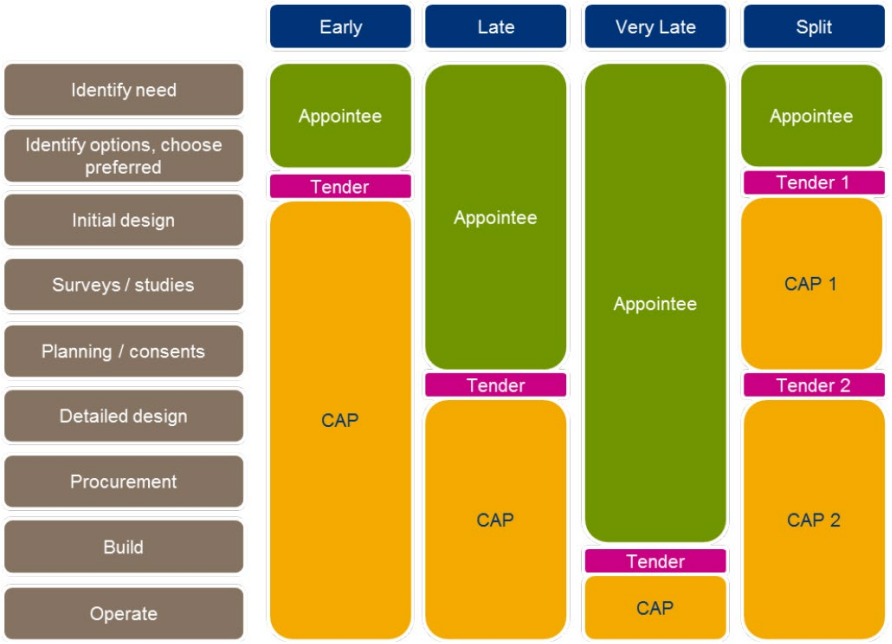
5.2.4 Project R: Ilkley Wastewater Treatment Works

If the new Ilkley / Burley WWTW were to be constructed as a DPC all risks are likely to be as per the Ofwat default and it would most likely be a DBFOM.

5.3 Ofwat's tender models

To help consider the amount of planning water companies should undertake before issuing a project to market, Ofwat has created four DPC options: Early, Late, Very Late and Split, as shown in Figure 8.

Figure 8: Ofwat's DPC Tender Model options



Source: Ofwat. *DPC Guidance for Appointees delivering DPC projects*. March 2023, p.27.

The first three tender models have a single tender at different times during the project formation cycle.

In the Early model, the tender process occurs in the options analysis phase. In this case the DPC contractor would be given a detailed output specification and would then determine an appropriate design, undertake surveys, secure planning and complete the detailed design before building and operating the facility. Potentially the DPC could even be given the option to propose different sites for facilities and buy the land for these sites. However, conceptually there are few instances where this could be appropriate for a DPC contractor as water assets will often be needed on specific sites and it is not appropriate for the DPC to take planning permission risk, given the uncertainty with outcomes. There would also be significant concerns that the eventual solution is VfM.

In the Late model YWS would undertake some initial designs, undertake surveys and obtain planning and consents. There is a question about the level of specificity YWS would require from bidders. There could be two sub-options:

- Output specification at defined locations;
- Detailed design specifications at defined locations.

YWS choice of option will influence the type and scope of the planning permission that will be applied for. The former, which we label high-level planning permission, could be a very outline planning permission for a facility capable of delivering the output specification with an indicative schematic of what the facility could look like. The latter would be more detailed (but not be final designs).

With both sub-options there will be a need to resubmit the application once final designs have been prepared. However, with each approach the intention should be that the outline/ more-detailed planning permission will provide enough certainty to the CAP that its final design will secure planning permission. Should planning be refused or additional costly requirements for extraneous reasons be required the CAP contract will need to allow for CAP compensation.

In the Very Late model the project is tendered after the project has been built so the investor only bears financing and operational risks. As a generalisation Very Late DPCs is unlikely to be attractive for most projects because the opportunity to add value and innovate in design and delivery has been lost. This option has been used on Offshore Transmission Owner (OFTO) PPPs where investors bid to finance and operate newly built offshore cables from offshore wind farms to the UK mainland. The difference here is that the companies that bid to build offshore wind farms have already prepared competitive tenders with innovative low-cost transmission cable designs to reduce the overall cost of wind farm system, so the OFTO is effectively a PPP financing competition to operate the cables.

The fourth option is the Split model, where the project is tendered in two stages, one for the initial design and planning stage and a second stage to cover the build, financing and operations processes.

For the four projects under consideration the Late Model is likely to be the most attractive, as YWS already has plans for where the two WTWs and pipeline routings, the Ilkley WWTW and the storm water overflows will be located. In some cases, the land will already be owned by YWS, and where it is not the intention is YWS would acquire the land prior to issuing tenders.

6 Value for Money Assessment

One of the critical factors to understanding the viability of projects under the DPC model is whether there is potential to deliver them in a way that provides VfM for customers compared to the viable alternative or YWS's Business as Usual (BAU) procurement method. For example, Ofwat's March 2023 '**Guidance for Appointees delivering DPC projects**' mentions an alliance between YWS, the successful CAP and its sub-contractors as an alternative to target cost pricing[8]. As well as its existing Framework direct awards and Framework competitive tenders, YWS is actively considering standard alliancing between itself and contractors as an AMP8 option.

6.1 Ofwat Value for Money Guidance

In its March 2023 '*Guidance for Appointees delivering DPC projects*' report Ofwat has given high-level guidance on the VfM assessment. This assessment is one of the critical drivers for DPCs to ensure that significant benefits are provided to customers.

6.1.1 Timeline and Process

Ofwat has provided indicative guidance on when it expects VfM assessment should be conducted. As stated in Section 3.1, during Stage 1 (Establishing the Strategic Case), Ofwat "*no longer require a VfM assessment of delivery via DPC versus the in-house counterfactual at this early stage in the DPC process.*"

In Stage 2 (Approach to Procurement Plans), Ofwat does not require a robust VfM but does provide gudiance that it would like to see an explanation of how the procurement plan will deliver best value for customer. Following the Stage 2 submission, it expects to have early engagements with YWS on the VfM to lead to a full VfM in Stage 3 (Gaining Conent to Procure the Project) where it expects "*full details of the VfM assessment, including a full financial model and customer bill impacts*". The results of this VfM is to be further refined in the Stage 4 (Gaining Consent to Enter Into A CAP Agreement) with more detailed analysis on customer bill impacts forming the basis of the detailed assessment.

Ofwat acknowledges the challenges and complexities of finalising the VfM at Stage 4 where bids received may be very different to the assumptions in Stage 3. Ofwat respond that approvals will be given if a competitive procurement was run, a 'fair' market price was achieved, and the water company acted in the best interest of its customers.

6.1.2 Assumption Guidelines

As indicated, in Ofwat's Stage 3 YWS will be expected to build a full financial mdoel to analyse the difference in Net Present Value (NPV) of the costs (in real terms) under a DPC procurement and under in-house delivery. Some of Ofwat's important components of this include:.

- Under the BAU, Capex, Opex and Repex costs should be based on recent information from similar schemes (or parts of schemes) that the water company has built;
- Capex and Opex for the DPC case should also include efficiency assumptions and an acknowledgement of Optimism Bias given YWS information on outturn costs on other similar schemes will have inbuilt into them an average Optimism Bias.
- Financing costs are likely to be different. For the DPC case, Ofwat expects YWS to develop financing costs based on similar transactions and market engagement, and then to justify the assumptions. For the in-house counterfactual, Ofwat expects YWS to use its own actual Weighted Average Cost of Capital (WACC);
- Capital structure is likey to be different for the DPC versus the in-house counterfactual with differences in gearing assumptions;
- Normisations/ adjustments for differences in risk allocation are generally not permitted;
- Sensitivity scenarios are expected on costs, financing costs and on different contractual arrangements.

6.2 Our approach to Value for Money

We agree with Ofwat's approach but suggest there is merit at this stage in undertaking a high-level qualitative VfM analysis to avoid pushing projects through Ofwat Stage 1 that are likely to have a high probability of failing the more detailed quantitative VfM

[8] Ofwat. Guidance for Appointees delivering DPC projects. March 2023, p.

tests in Stages 2 and 3. Thus we have chosen to undertake preliminary VfM assessment so that YWS does not propose projects to Ofwat that are unlikley to get through later VfM hurdles by providing VfM for customers.

6.2.1 Our framework to assess Value for Money

We have developed our framework by utilising as a start a VfM framework prepared by KMPG in PR19, as shown in Figure 9 which was aligned to Ofwat's PR19 methodology. Their approach assesses VfM against five customer value layers, which are areas which potentially create value to customers under DPC.

The five customer layers are:

- **Financing Costs –** DPC financing costs are compared with the in-house counterfactual which is assumed in the WACC. The DPC financing cost will include cost of debt and equity and gearing.
- **Cost Efficiencies** – Cost efficiencies that reduce costs and costs increases (e.g. from new contractual interfaces) compared to existing arrangements.
- **Innovation Opportunities** – Innovation in the project design, construction processes or operations that lead to cost efficiencies or more reliable service standards for customers.
- **Timing and Bill Impact to Customers** – The ability of DPCs to defer Capex expenditure on customer bills.
- **Deliverability and Lead Time** – Risks associated with variations in the delivery timeline including early or late delivery of the asset.

Their methodology assesses the layers from both a qualitative and quantitative perspective. Our approach includes all of the Qualitative criteria and a high-level view on Quantitative Criteria where feasible.

6.2.2 Our Value for Money criteria

Figure 10 overleaf explains our VfM Money criteria, with High (H) being seen as very positive and Low (L) as negative.

Our approach includes most of KPMG's Qualitative criteria but has excluded the **Cost Efficiencies: Core business to water company** sub-criteria as there is no reason a DPC cannot perform a water company's core functions (supplying potable water and disposing of wastewater) more efficiently than a water company.

Figure 9: KPMG's Qualitative and Quantitative VfM assessment criteria

Potential Customer Value Layers	Criteria	Qualitative	Quantitative
A) Financing costs	Financing costs		✓
	Market appetite & bankability	✓	
	Risks	✓	
B) Cost efficiencies	Cost savings due to efficiency		✓
	Procurement and contract management costs		✓
	Bid costs and interface costs		✓
	Cost of interoperability	✓	
	Risk and cost of failure	✓	
	Core business to water company	✓	
C) Innovation opportunities	Innovation	✓	
D) Timing and bill impact to customers	Start of revenue stream		✓
	Expenditure profile		✓
E) Deliverability and lead time	Deliverability and lead time	✓	

Source: Anglian Water. *PR19 Submission: 11C. Anglian Water Direct Procurement for Customers DPC Eligibility Assessment*. August 2018 (accessed: here)

Our approach also includes a very high-level view on four of KPMG's Quantitative sub-criteria, namely **Financing costs**, **Cost savings due to efficiency** and combines the **Procurement and contract management costs** and the **Bid costs and interface costs** into one sub-criteria as they are very similar.

Figure 10: Our Value for Money Criteria

Customer Layer	Criteria	Description	Low	Medium	High
Financing Costs	Financing Costs	A conversion of the CAP's gearing level, debt and equity costs into a WACC to be able to compare to the WACC for YWS on balance sheet investments. For PR24 Ofwat's allowed real rate of return for a 'notional' company is 3.29%[9].	Higher WACC than YWS based on a combination of gearing, interest rates/ bond yields and equity returns.	The WACC for a CAP and for YWS is likely to be similar.	Lower WACC than YWS based on a combination of gearing, interest rates/ bond yields and equity returns.
	Market Appetite	Market appetite includes the potential number of bidders and market interest in the project, both amongst the supply chain and the financing community. Competitive bids with several bidders can reduce financing costs as equity investors may need to lower return expectations.	Few market players are likely to be interested in the project and/or many concerns were indicated about the project.	Market interest in the project from some market players.	Majority of investors and supply chain companies expressed interest in the project.
	Bankability	Bankability refers to the ability of the project to raise private finance which impacts financing costs. Very small projects are less attractive to the market, and whilst very large (£500m+) projects bond launches may be cheaper, result in an extended time for financial close. In reality, on very large projects whether bank loans or bonds end up being cheaper is partly dependant on YWS's views as to whether the CAP needs to have an investment grade rating during the construction period, and whether Target Cost pricing is allowed.	Capex of the project less than £50m.	Capex of the project £50m to £150m, or £500m+.	Capex of project is £150m to £500m. Investors noted a Capex sweet spot may be around £200m-£350m.
	Risks	Projects with more unknowns (e.g. actual ground conditions where the CAP is liable) or brownfield investments within existing operational YWS facilities will be seen by investors as more risky as there will be greater chance of construction delays and cost overruns. Projects which have large pass-through Outcome Delivery Incentive (ODI) penalties for poor performance beyond a lack of availability deductions will also be seen as riskier	Projects within YWS operational sites, or with significant site condition risks for CAP (e.g. for long pipe networks) or with large ODI penalties.	Projects where the CAP is liable for site condition risk which can be priced or within YWS operational sites but still self-contained, or with some ODI penalty pass-through costs.	Self-contained greenfield investments with few site conditions risks and no or very limited pass-through ODI penalties.
Cost Efficiencies	Cost Savings due to Efficiency	Potential for cost saving due to efficient management of Capex and Opex across the lifecycle of the project.	There will be immaterial saving compared to BAU.	Capex and Opex efficiency saving over the lifetime of the asset are expected to be between 0 to 10%.	Capex and Opex efficiency saving over the lifetime of the asset are expected to be over 10%.
	Procurement and Bid Costs	Likelihood of increased risk and costs associated with the procurement and tendering of the DPC contract and of managing the CAP Agreement. This will apply to all DPC projects. At this early stage of project selection procurement and bid costs for YWS have been assumed at 2% of total Totex costs. From a bidders' perspective, our experience of PPP schemes is that the combined procurement and bid costs are higher than a standard EPC procurement as consortia of bidders (construction company, operating companies and financiers) need to be found and their level of due diligence is likely to be higher than an EPC financed out of YWS regulatory allowance. Hence, all DPC projects are ranked low.	All DPC projects will be ranked low.	All DPC projects will be ranked low.	All DPC projects will be ranked low.

[9] OFWAT. PR24 *Appendix 11 Allowed return on capital*. December 2022 (accessed here)

Figure 10: Our Value for Money Criteria (continued)

	Cost of Interoperability	The costs of interoperability are linked to the discreteness from YWS activities, both in the construction phase but especially in the operations phase. The more interfaces an asset has with YWS network the greater the cost of interoperability which can limit cost savings.	Has not passed Ofwat's Construction Risk and/ or Operations & Maintenance Risk tests.	Passes Ofwat's Construction Risk and Operations & Maintenance Risk tests.	Comfortably passes Ofwat's Construction Risk and Operations & Maintenance Risk tests.
	Risks and Cost of Failure	All projects, however procured have a chance of failing to meet planned construction timelines, but a DPC project is more likely to be delivered on time. In passing operations to a third party there may be a perception there is more risk of issues arising during the operational period, although the payment mechanism mitigates much of this. A concern for the CAP investor will be if the contract has high pass-through ODI penalties, Price Control Deliverable (PCD) penalties, Environment Agency penalties / enforcement actions for failings as these would be in addition to availability deductions. Further, some investment areas may have particular negative reputational and Environment Social and Governance (ESG) risks. Further, projects that will affect lots of people will also be seen as riskier.	Investment has high ODI penalties, PCD, Environment Agency, reputational or ESG risks.	Moderate ODI penalties, PCD penalties, Environment Agency penalties, reputational risks, or ESG risks.	Investment has low ODI penalties, PCD penalties, Environment Agency penalties, reputational risks, or ESG risks.
Innovation Opportunities	Technology	Innovation and technology can be used to create better efficiencies and/or performance.	Standardised technology with very little ability to innovate.	Innovative technology, but with some questions about the track record of the technology	An innovative use of proven technologies (e.g. offsite Methods of Modern Construction fabrication, ability to optimise use).
	Complexity	More complex projects can benefit from CAP experience in design, construction and/or operations.	Simple process.	More complex process.	Complex process.
Deliverability and Lead Time	Lead Time	The longer the lead time, the more likelihood of increase in cost overruns/ inflationary pressures and the greater chances of further delays. These can all mean bidders add on very large risk pots.	Time from contract signature to commissioning more than 5 years.	Time from contract signature to commissioning 4 – 5 years.	Time from contract signature to commissioning less than three years.

6.2.3 YWS Counterfactual approach

In order to assess VfM, there is a need to compare the DPC solution to YWS's counterfactual costing if procured with existing methods. The counterfactual Devex, Capex, Repex and Opex costs should be "*based on a recent, robust cost estimate using up to date information. which takes into account the maturity of the design and development of the project.*"[10] In YWS's case this will be Framework direct awards and Framework competitive tenders.

Currently there are about 25 organisations on the YWS Frameworks ranging from large contractors to specialised contractors. Since the start of AMP7 YWS has run a number of competitive tenders amongst Framework contractors for contracts worth more than £25m. YWS's experience of its 21 AMP7 within Framework mini competitions is they have yielded on average 10% savings compared Framework direct awards. However, on storm overflows YWS are targetting a 15% saving with competitive tendering.

Contract terms for both Framework direct award and Framework competitive tendering will be similar. YWS contracts commonly either ask for a Parent Company Guarantee (PCG) for 10% of the Capital value or a £1m Performance Bond. A Parent Company Guarantee for 12 years is requested, and all Performance Bonds are for contruction duration plus 12 months to allow for defects.

Each of the four projects, being above £200m, are likely to be tendered competitively and similar savings to those achieved to date would be envisaged. For information, in determining the Totex values in Section 3 and in Appendixes 1, 1A, 2, 3 and 4 the Capex values have not assumed any procurement efficiencies. Seperately Ofwat has asked for a prescriptive format of costs for potential DPC proejcts and this is included in Appendix 5.

Seemingly excluded from the comparison would be YWS and construction contractor alliancing as YWS will have no recent experience of this, but it is questioned whether such a comparison should be added as another procurment option as it may have better VfM than Framework direct awards, Framwork competitive tenders or DPCs.

6.2.4 Our assessment of the projects

Figure 11 overleaf includes our scores for the five projects (if the two WINEP Storm Overflow projects are considered separately). The rationale for not allocating scores to a Low, Medium or High award is because the assessment is more perceptual with some criteria have more importance than others.

Financing costs

Within the value driver financing costs there are four sub-criteria:

- **Financing Costs.** We are not aware that any DPC will be able to secure a lower cost of finance than the cost of finance YWS will be able to secure. This is particularly the case for A- rated YWS. Hence all projects are awarded a Low (L).

- **Market Appetite**. Different interviewees had different thoughts and interest about the schemes, with interest in particular schemes varying. Therefore, the Medium (M) description ('*Market interest in the project from some market players'*) is applicable for all projects, although the AMP8 Storm Overflow package with projects in the Scarborough/ Bridlington area and then one in Wetherby may have marginally lower market appetite than the more tightly grouped AMP9-10 Storm Overflow packages

- **Bankability.** According to the scoring approach in Figure 10, the Ilkley WWTW project (Totex £90m with development and construction costs being £72m) scores a Medium (M).

- **Risks.** Although all projects have been selected to be as discreet as possible, all projects are awarded a Medium (M) score primarily because all projects with have some Ofwat penalties, Environment Agency or Drinking Water Inspectorate actions for failing to deliver the service which would result in penalties beyond a daily unavailability deduction and so could be seen as adding additional risk to the projects. On many other PPP schemes the only penalties that can be levied are just for lack of availability. For instance, some interviewees were particularly concerned about the risks of failing storm water overflows attracting large fines.

[10] Ofwat. *Guidance for Appointees delivering DPC projects.* March 2023, p.42 (accessed here)

Figure 11: Value for Money Assessment against BAU of the four projects

Potential Customer Value Layers	Criteria	Project F: WINEP – Storm Overflow reduction (AMP8) Totex = £212 m	Project F: WINEP – Storm Overflow reduction (AMP9-10) Totex = £207 m	Project P: [redacted] Totex = £355 m	Project Q: [redacted] Totex = £253 m	Project R: Ilkley Wastewater Treatment Works Totex = £90 m
A) Financing Costs	Financing Costs	L	L	L	L	L
	Market Appetite	M	M	M	M	M
	Bankability	H	H	H	H	M
	Risks	M	M	M	M	M
B) Cost Efficiencies	Cost Savings Due to Efficiency	M	M	H	H	H
	Procurement and Bid Costs	L	L	L	L	L
	Cost of Interoperability	H	H	H	H	H
	Risk and Cost of Failure	L	M	L	L	L
C) Innovation Opportunities	Technology	M	M	H	H	M
	Complexity	M	M	H	H	M
D) Lead Time	Lead Time	L	M	L	L	M
Overall Qualitative Score		**L/M** **M if lead time can be reduced**	**M**	**M if long lead time** **M/H if lead time can be reduced**	**M if long lead time** **M/H if lead time can be reduced**	**M**

Key: **L** Low | **L/M** Low/Medium | **M** Medium | **M/H** Medium/High | **H** High

Cost Efficiencies

Within this value driver there are four sub-criteria:

- **Cost Savings Due to Efficiency.** This is one of the most important VfM drivers as our perception is the main way a DPC project can be VfM is if there is enough flexibility for bidders to devise ways to significantly reduce whole life costs to offset the higher financing costs DPCs will pay.

  The interviewees provided a number of ways significant cost savings have been able to be achieved by allowing output specifications on WTWs and WWTWs. Therefore, the two WTW projects both score a High (H).

  The Ilkley project would also score a High (H) if YWS again provided an output specification, not limiting the solution to a Nereda® packaged process which some interviewees explained did not have the flexibility to be optimally operated (e.g. only operating the WWTW at night when electricity prices are very low, or modulating with on-site solar PV generation that bidders may select to add). If a Nereda® process was mandated a Medium (M) score would be awarded.

  Storm water overflow projects will have less scope for cost savings compared to EPC projects given the maturity of the sector, especially as YWS is anticipating being able to save 15% on its EPC storm overflow projects by various means including a dedicated Stormwater Alliance to deliver this programme in AMP8 and potentially competitive EPC tenders amongst the Frameworks companies for AMP7 schemes. Despite this, new larger specialist contractors may be attracted to bid for these much larger storm overflow schemes that are not going to apply to be Framework contractors. Hence a Medium (M) is awarded.

- **Procurement and Bid Costs.** For all the reasons explained in Figure 10 a Low (L) score is awarded for all the projects.

- **Cost of Interoperability.** In selecting the projects, we have focused on choosing those which are as self-contained as possible, by selecting:
  - Grey infrastructure (civil solutions) storm overflows which are at or very near WWTWs, making the sites more discrete,
  - Greenfield new WTWs and WWTWs that can be built offline, connected once complete and then operated by a CAP under a DBFOM.

  Therefore, all are awarded a High (H) score.

- **Risk and Cost of Failure.** Four of the projects have a Low (L) score (i.e. perceived high risk) for different reasons. The six AMP8 Stormwater overflow projects are included in the Proposed PR24 list of projects to meet the minimum number of overflows Ofwat requires to be built within the period. Failure to deliver by the end of AMP8 would lead to failure to achieve EA targets for number of sites addressed and spill reduction. In particular the sites in Scarborough (Toll House CSO, Corner Café Stormwater Overflow and Scalby Mills CSO) are physically constrained and have a high public profile due to their locations on the promenade and influence on the local bathing waters. The initial estimate for delivery duration for Scalby Mills SPS is given as 7 years, with construction running into AMP9, however this would need to be brought forward as a 2030 completion date will be imposed.

  Incorrectly operating a WTW could result in harm to water consumers, and the Ilkley project has a regulatory deadline of 31 March 2026. The only project which may be perceived a lower risk (awarded a Medium (M) score is the AMP9-10 Stormwater overflow package as starting these in AMP8 would ensure delivery well in advance of original intended delivery dates.

Innovation Opportunities

Within this value driver there are two sub-criteria:

- **Technology.** During the interviews the level of innovation that may be possible (e.g. using offsite Methods of Modern Construction, building tunnels not storage tanks, adding renewable energy solar PV and wind turbines to sites wherever possible, operating sites at night when energy use is lower, changing maintenance regimes and using different technologies on sites) became clear. The opportunities on WTW and WWTW appear to be greatest hence would be awarded a High (H) score. However, because of site constraints at Ilkley WWTW opportunities will be less, thus a downgrade to a Medium (M). Opportunities on Stormwater overflows are less, due to the AMP8 batch containing very physically constrained sites where solution options may be limited but are still there, hence a Medium (M) score.

- **Complexity.** Both WTW and WWTW are complex for different reasons. With the former there are many different processes that need to be performed to clean water, deal with bacterial contamination and operate in an environment where incorrect dosing of chemicals can have severe impacts. For the latter there is the settling, cleaning and safe disposal of residues.

Thus, for the same reason as for Technology section, the WTW works are awarded a High and Ilkley WWTW a Medium (M). Although building storage tanks does not sound complicated, for large tanks there are particular complexities in avoiding collapsing earthworks, so again a Medium (M) score is awarded.

Lead Time

This has one criterion, namely the Lead time. A few interviewees said that any construction period longer than five years would be seen very unfavourably as the financing costs during the build period would become extremely high with CAP Annual Payments only starting from successful commissioning and operations. As an example, if a £200m Capex project takes three years to build then with an effective cost of finance of 8% nominal would become c.£225m. The same project over five years would end up costing c.£244m (an extra 8%).

For each of the projects YWS has provided its estimated Capex, Opex and Repex costs, and along with that a Capex duration. This duration will include the time for detailed design, but time for detailed design will also be needed in the DPC projects if Output Specifications are provided. We are unsure if the Capex costs include preliminary works or Optimism Bias.

Figure 12 reports the construction periods YWS has supplied. As can be seen, the periods are all quite long.

Figure 12: YWS assumed construction periods for the selected projects

	Construction period (years)	Comments
Project F: WINEP – Storm Overflow reduction (AMP8)	4-5	YWS assumption is the projects we have identified will take 4-5 years. The exception to this is the Scalby Mills CSO, which has a construction period of 7 years. It was noted however this forecast may be revised to suit a 2030 deadline as progression is made through scheme development. Delivery by DPC may make achieving the 2030 deadlines more difficult if the procurement period is extensive.
Project F: WINEP – Storm Overflow reduction (AMP9-10)	4-5	Given the AMP10 Storm Overflow projects are that much larger, the 4-5 years YWS assume for the AMP8 projects may be an underestimate.
Project P: [redacted]	>5	The WWTW are estimated to take 6 years and the pipe network 4 years.
Project Q: [redacted]	>5	The [redacted] project is estimated to take 6 years.
Project R: Ilkley Wastewater Treatment Works	4-5 years	Given there is a regulatory delivery date of 1 April 2026 we are unsure how under any procurement route Ilkley can be delivered in time.

During the market testing interviews we collected some views on YWS's assumed build periods. An example of a WTW larger than [redacted] (50MLD) was given with a two-year construction programme, highlighting the perception that the current YWS estimates appear conservative and should be reviewed. With external financing, every day that passes means more financing costs. PPP projects typically are completed within the timeframes planned.

It is recommended that YWS further investigate the opportunities for quicker delivery as this will be a key determinant for VfM. For example, by setting an Output Specification will time be able to be saved, or will that only bring forward the date for the Capex costs starting?

6.2.5 Value for Money conclusion

Trying to add up all the scores awarded to each project is not appropriate as VfM is more nuanced. The main question will be, can the benefits of whole life costing and consistent operations offset the higher costs of finance along with appropriate risk transfer and more consistent operations?

Perceptually the five projects have been awarded the following scores:

- **Project F: WINEP – Storm Overflow reduction (AMP8):** A Low/ Medium (L/M) score is awarded, as getting a DPC-procured package complete by the end of AMP8 may prove challenging, and the constrained Scarborough sites may limit the scope for innovation. If the timelines could be revisited to enable procurement, design, and delivery by 2030 and the site constraints are further revisited to consider whether they are a major barrier to contractor DPC interest, the combined impact of these factors means the AMP8 package could be more suitable for DPC and would be scored a medium (M).

- **Project F(A): WINEP – Storm Overflow reduction (AMP9-10):** A Medium (M) score is awarded, more than the smaller AMP8 WINEP Storm Overflow package as the development and construction costs are £191m which will make it more bankable and increase the attractiveness to bidders

for whom the costs for bidding for a large c.£200m Capex scheme will not be much higher than the costs for bidding for a smaller £100m scheme.. Like the AMP8 Storm Overflow package there is a need for YWS to reassess the actual length of time the projects would take from financial close to commissioning, but even if the projects could be constructed within a three-year timeframe it would not influence the overall score.

- **Project P:** [redacted] This project is awarded a Medium (M) score benefitting primarily from the cost savings that may be achieved through a combination of technology, complexity management and efficiency savings. Having Totex above £200m is also beneficial. A Medium/ High score would be awarded if it is possible to deliver these projects in shorter timescales so our advice about YWS relooking at timelines for how long it will take from financial close to commissioning is particularly pertinent.

- **Project Q:** [redacted]**:** The rationale for these scores is the same as for [redacted] WTW. What didn't come out fully from the interviews was the fact that from a VfM perspective [redacted] is probably marginally more attractive than [redacted] given the amount of work that will need to be done by YWS to secure land agreements for all the sites and the c.110km of transfer mains prior to tender launch, and the pressures on YWS to ensure that all land parcels are available for pipe laying according to the winning CAP's timelines. There will also be more site condition risks for the CAPs on [redacted] as it may not be possible for bidders to assess the full route as the easements and wayleaves may not allow that or it may be the wrong time of year (e.g. if a route crosses arable farmland).

- **Project R: Ilkley WWTW:** If there was not the 2026 regulatory deadline that automatically excludes a lengthy DPC procurement it would score Medium (M). This is partly because the constrained site and YWS's preference for a Nereda® packaged solution will potentially limit opportunities for innovation.

  If the 2026 deadline is negotiable then like other projects there is a need for YWS to reassess the actual length of time the projects would take from financial close to commissioning, but even if the projects could be constructed within a three-year timeframe it would not boost the score to a Medium/ High given the site constraints.

The conclusion is that apart from the AMP8 Stormwater Overflows projects, all projects have a potential to offer good VfM, with WTW and larger WWTWs than Ilkley probably offering the most potential. The AMP8 Stormwater Overflows package could offer good VfM if procurement, design, and delivery could be achieved by 2030.

7 Market sounding / engagement

Initial market sounding discussions were held with the following parties:

Five delivery contractors (follow links for further details) including:

- Enpure;
- Glan Agua;
- Mott McDonald Bentley.

Four infrastructure investors (follow links for further details) including:

- Equitix: Focuses on mid-market infrastructure projects and is part of a consortium bidding the Haweswater Aqueduct Resilience Programme DPC;
- DIF Capital Partners: Targets high-quality, long-term infrastructure projects. Invested in Thames Tideway Tunnel and other water PPP projects.

7.1 Engagement process

Prior to the interviews, to provide a briefing for the companies/ investors we approached we prepared a one-page summary of the DPC approach, a one-page summary overview for each project, and a one-page indicative risk allocation matrix. We then had different questions for the delivery contractors and the investors.

The information we shared was suitably anonymised to remove project names or specific location information. **Appendix 8: Market testing material shared with Supply Chain and Investors** contains the material that was shared with the parties.

7.1.1 Discussion topics

Discussions with both the contractors and investors focussed on the following key areas:

- Company background and experience;
- Understanding of DPCs and contract terms;
- Outline of YWS proposed DPC packages;
- Features of potential DPCs that may make them more or less attractive;
- Ofwat risk allocation matrix;
- Investment structures.

7.2 Engagement feedback

7.2.1 Summary of key findings

The below summarises the key findings from the market engagement exercise undertaken:

- **Project appeal** – Different projects appealed to different contractors and investors. No one project was identified as more attractive than the others, and all would be considered by some interviewees.
- **Long term thinking** – Across the board the feedback was that a Water Company launching a single DPC project would receive less interest than one with a visible rolling programme of multiple DPCs to be released in a planned sequence.
- **Residual Value payment** – The concept of a nominal payment at the end of the operational period was well received, with work needed to ensure hand back conditions are objective, technical and clearly defined to offer sufficient comfort to investors that the end of contract payment will materialise.
- **Specification** – Most consultees prefer an Output Specification rather than a Design Specification to allow for greater innovation and efficiencies.
- **YWS assumed construction times** – As explained in Section 6.2.4, interviewees suggested that projects that will take more than five years to achieve commissioning would not be attractive as under a DPC normally no money is paid to the DPC company until the project is successfully commissioned. For instance, one interviewee evidenced that it had built a WTW as large as the new [redacted] project (50MLD) in less than two years.

  All of YWS's project timings are longer than this. Thus, it is recommended that YWS revisit these timings, where possible, from the perspective of a DPC company that will be very focused on building the facilities as quickly as possible.
- **Keep talking** – All consultees emphasised that visibility was key, so regular updates and market engagement will be vital to building and maintaining interested in YWS's DPCs.

7.2.2 Project-specific feedback

The following is a list of project specific feedback gathered during the interviews:

Project 1 – WINEP Storm Overflows

This is a classic civil engineering project and appealed to contractors who specialise in complex construction and below ground works. The bundling of several of projects was accepted so long as they are geographically grouped for construction efficiency.

To create an attractive DPC will require a very clear payment mechanism and definition of responsibilities for potential spills and associated penalties. Reputational risks for being responsible for sewage overflows were perceived by some, but others were impressed that YWS was considering a DPC approach for this type of work.

Given the scale of the programme interviewees expressed an interest in seeing a rolling programme of stormwater overflow projects being launched to the market over the years. This would increase the level of market engagement. Such a programme would also create opportunities to learn and innovate and build market capacity in a resource constrained sector.

It should be noted that the AMP8 batch presented during the market engagement was smaller than the one YWS are now proposing for DPC as it excluded the Bridlington STW. The Totex value of the batch presented to the market was £108m compared to £212m in this report.

Projects 2 & 3 – [redacted] WTW

These two projects appealed to contractors who specialise in process engineering. It stimulated a rich discussion about opportunities for renewable energy, efficiency improvements and the use of digital technologies to drive operational performance.

The perception was that to be most attractive as a DPC the scope would have to be output based to provide maximum flexibility to the CAP to design the process within DWI constraints and Regulatory requirements.

Civil engineering focussed consultees were less enthusiastic about these projects due to perception that Water Companies will struggle to allow the technical freedom of output specifications.

The addition of the transfer main with the [redacted] project did not significantly affect attractiveness for most consultees, but the realities of YWS needing to secure wayleaves and easements for the route prior to tendering and find a way for bidders to assess ground condition risks, archaeology and environmental impacts along the route may make it more challenging.

Project 4 – Ilkley WWTW

During the interviews we deliberately did not mention the 2026 regulatory deadline as we wanted to focus on the interest in WWTWs schemes and also test the market appetite for smaller projects. Being below £200m generated interest particularly amongst some of the contractors less familiar with DPC delivery. However, for some investors the lower Totex value will be at the lower end of what they would want or expect but they would consider a small scheme if it was part of a wider YWS DPC programme.

Further, the project is currently scoped for a Nereda® packaged wastewater solution, and this was considered by negatively as they felt it would curtail the freedom to innovate. As with the WTW solutions, an output specification would be preferred to allow scope for more efficient approaches to reduce whole lifecycle costs.

7.2.3 Other feedback from consultees

Beyond the key messages provided in 7.2.1, the following is a list of other findings and themes that were discussed:.

The market generally accepts Ofwat's DPC principles

- In general consultees were happy with Ofwat's Default Risk Allocation explained in Section 5.1 and Appendix 7: Ofwat DPC Risk Allocation.
- Consultees support the idea of an availability-based payment mechanism, and then for facilities with varying demand like WTWs and WWTWs paying the marginal costs of variations, e.g. covering additional chemicals or electricity that may be needed when demand is higher. Additionally, if Opex costs are material, there were some suggestions to be able to reprice some operational costs on a periodic basis (e.g. electricity and chemical prices) or link to reputable market indexes to avoid large Opex risk premia.
- There is acknowledgement that the time from tender launch to selecting a preferred CAP and signing contracts will be about two years, although one consultee advised that even before Pre-Qualification Questions (PQQs) launch there is merit in issuing information to the market as it may take 6-12 months to form consortia. This links to the key message of keep talking.
- Asset lives will partly determine CAP contract lengths, but the interviewees were supportive of our suggestion of 25 years for the identified projects. Some said longer would reduce the CAP annual payment as long-term debt markets have returned since the 2008 Lehman's crash,. Our response would be the longer the contract the greater the chance of variations which if not

carefully drafted with clear methods to price can end up being very costly. Thus, there is a balance to selecting an appropriate contract length.

- Many interviewees mentioned they were concerned there is no Standardised CAP contract, and different ones are being drafted for the DPCs currently in procurement. The advice is for YWS to hold off from issuing tenders until the market has settled on a standard CAP contract template or Ofwat has issued one.

There were differing views on the willingness of construction companies to offer Lump Sum contracts

- Many consultees gave different views on whether Lump Sum construction contracts are still available in the UK water sector. Some commentators said they were, others said they are rare apart from in the housing sector and others said UK companies are more reluctant to offer Lump Sum contracts but large European construction companies that may be interested in bidding for £200m+ Capex deals are still offering Lump Sum prices.

- Target costing was welcomed by some interviewees, but some investors commented that Target Costing, where construction prices are not finalised at financial close, makes it harder for project finance markets to operate. For instance, they may result in higher costs of finance, and lower gearing (debt/ equity allocations) during the construction phase. There is thus a trade-off between potentially YWS customers indirectly paying less for DPC construction works on average, against the higher costs of finance. This is explained in Box 3: Lump Sum and Target Cost Pricing on page 60 of Appendix 7.

- Linked to the point about construction timeframes in Section 7.2.1 above, a shorter construction period is likely the make Lump Sum construction contracts more acceptable.

- Ultimately by the time YWS DPCs are launched the construction market will have changed, inflationary pressures may have lessened, and global supply chains may have returned to being more stable.

Securing sufficient DPC interest may prove challenging

- Across the UK water sector there will be much more capital investment in AMP8 which will place additional strain on an already stretched construction industry. Some consultees said they were struggling to find appropriately skilled workers, but others said it is not an issue, so the message is mixed.

- All water companies will issue AMP8 DPC tenders so YWS's will need to stand out to attract sufficient interest.

- If construction companies are already resource constrained some said that they would prefer to bid for Framework contract where there could be a lot of work, compared to a DPC which will take significant effort and cost and where they have potentially a lower chance of winning.

- The debt markets may also struggle if 20+ DPC projects require financing at the same time.

- As stated in Section 7.2.1, although the principle of a Residual Value payment was generally accepted, with the caveat about needing to ensure very objective asset hand back standards, some consultees were concerned about the guarantee for where the money (which could be 40%+ of the original Capex) would come from. They await guidance from Ofwat that in 30+ years hence it will provide approvals and a mechanism for the water company to make the payments.

- There is also a concern that after expending considerable effort on bidding, Ofwat may ultimately decide that the bids received do not offer VfM and halt the procurement resulting in abortive costs for all bidders.

But there are actions YWS do to increase interest

- YWS is already being proactive by focussing on discrete greenfield projects that can be built offline, in most cases operated by the CAP as a DBFOM and are either in one location or are on different geographically proximate sites.

- Consider offering bid fee support to garner interest, e.g. giving an allowance of £250k for the top three evaluated bidders paid at financial close.

- Already mentioned in Section 7.2.1 consider marketing a rolling programme of projects each around the £200m-£300m Capex scale, although some of the smaller construction companies were interested in considering Capex projects around £100m if Ofwat is flexible on its £200m, Totex Scalability Threshold.

- Issue PQQs by the latest of the end of Year 3 of AMP8 so that contracts can be signed before the end of AMP8, and construction works can commence in Years 1 and 2 of AMP9 as the first two years of each AMP normally have less building works.

- Consultees are keen to ensure that contract terms are fair in transferring regulatory penalties, otherwise the combination availability deductions and penalties could curtail interest.

- Make sure that the tender evaluation questions do not focus wholly on the lowest annual CAP payment, but include evidence of building similar projects, carbon emissions, the consortium's approach to stakeholder engagement, etc. However, they emphasised the questions need to set criteria to avoid excluding many companies, e.g. experience of operating a WWTW as UK companies' experience of operating WWTW will be less as works tend to be operated by the water companies themselves.

Appendices

Appendix 1: F) WINEP: Storm Overflow Spill reduction (AMP 8 Phase 1 package)

Interviewed: **Michael Wynn and Iain Wolsey (24/03/2023), Mark Russell (05/05/2023), Michael Wynn (31/07/2023)**

AMP8 Programme Schemes

New or Replacement			New	**Start Date**	2025	**End Date**	2055	
Expenditure Profile	**Total (£m)**	**AMP 8**	**AMP 9**	**AMP 10**	**AMP 11**	**AMP 12**	**AMP 13**	**AMP14**
Development Costs*	22	22	0	0	0	0	0	0
Construction Costs	186	172	14	0	0	0	0	0
Repex#	0	0	0	0	0	0	0	0
Opex ^	4	0	1	1	1	1	1	0
Totex ^ **	212	194	15	1	1	1	1	0

Key: * The Capex values provided by YWS did not split costs into construction and design costs. It is assumed that design costs are 10% of total Capex costs and all occur in AMP8. Land and planning costs were supplied separately by YWS, and these have been added onto the 10% design costs to give the development costs shown here.
No Repex included in data provided by YWS.
^ Opex rounding to nearest £1m, Total Opex and Totex based on unrounded values.
** Totex excludes the additional YWS DPC costs for developing the project for delivery via DPC, running the procurement process and then managing the CAP over the 25-year concession.

Recommendation

AMP8 Programme Package

This package is a combination of the largest and most discrete projects from the AMP8 programme. These could be delivered with a DPC provided further development of these solutions demonstrates they are practicable for the given locations, and it is accepted by Ofwat as below threshold for scalability.

If taken in combination with the AMP9-10 Storm Overflow (Appendix 1A) then there could be a rolling programme of Storm Storage DPCs incorporating these AMP8 and AMP9-10 schemes and potentially some of the remaining large storage packages. Market feedback indicates a programme of DPC packages is likely to be attractive.

If it was to be a DPC it would be a late DPC. The recommended approach to market would be a DBFM or ideally a DBFOM depending on how integrated the overflow is in the network.

The DPC Package

Background

The AMP8 programme of works to reduce storm overflows to rivers and coastal waters comprises 238 schemes, selected to allow YWS to slightly exceed Ofwat targets for the period. The programme has a total Capex estimated at over £950m. A subset of this programme may be considered suitable for DPC if the right schemes are selected.

Most of the storm overflows require the construction of new or additional storm storage capacity and flow return for treatment. There is some scope for blue/green infrastructure (defined by the European Commission as '*strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem service*') to replace or complement grey (civil) solutions where possible. Many of the solutions are small and there are operational complexities associated with storage that is embedded within sewer networks.

To find the most operationally discrete solutions for DPC the following selection hierarchy has been applied:

1. Grey infrastructure proposed
2. Required storage volume >5,000m^3;
3. Overflow located at the end of a catchment, i.e. on or close to the treatment works.

Some of the Storm Overflow Schemes associated with the AMP8 Ilkley Bathing Water compliance are included in Appendix 4. However, it is understood that none of these will be able to be constructed by a DPC because there is to a regulatory deadline of March 2026.

Schemes which are predominantly green or blue infrastructure have been excluded due to the number and complexity of interfaces with customers and partners (see Appendix B (Living with Water) of Arup's Phase 1 report "Shortlisting of Potential DPC Projects").

Potential DPC Packages

From the AMP8 programme this results in a package of six schemes over a 25-year concession period:

Storm Overflow	Design & Construction Costs (£m)	Opex (£m/y)	Totex (£m)
Scalby Ness Outfall (Scalby Mills CSO)	44	0.02	44
Wetherby WWTW	27	0.03	28
Toll House Stormwater Overflow	21	0.02	22
Corner Café CSO	12	0.02	12
Bridlington STW	61	0.02	62
Scarborough STW	42	0.03	43
Land & Planning Costs	-	-	1
TOTAL	**207**	**0.12**	**212**

This package meets the Ofwat Scalability Threshold.

The DPC Package

DPC Development

The level of development of the sites is relatively low, and there is more work required to develop the modelling and solution selection for each location. It is therefore possible that the required overflow volumes and the associated scheme costs may increase or decrease for the following reasons:

1. Storage volume may be decreased by increasing the associated WWTW capacity;
2. Sizing is currently based on achieving a maximum of 10 spills per year per overflow. There is also a 'No Harm' criteria to be assessed which may require greater storage volumes at sensitive sites. The methodology for assessing this has not yet been agreed;
3. The modelling relies heavily on assumptions about climate change impacts on rainfall. Any changes in the climate change assumptions could increase or decrease the required storage volumes at each location.

Operation and Maintenance

This package has very low Opex compared to other potential DPCs reviewed in this report, as the storm tanks require minimal power, consumables or operational input. The selection of storage at the end of the sewer network limits operational interfaces and risks, however there would need to be a careful definition of responsibilities in relation to spills as it is expected that the regional average spill reduction to 10 spills per year will become an ODI.

BAU Procurement Arrangements

The storm overflow programme from AMP8 onwards is significantly larger than any similar programme of network storage that has been delivered previously. The grey infrastructure solutions required are well understood and deliverable. The works may either be procured through a call off Framework contract, packaged into £25m+ projects and competitively tendered (as has been successfully done in AMP7) or procured using an Alliance. However, it is understood that Ofwat BAU should be against existing procurement approaches, rather than new options.

Assessment against Criteria (with changes from Phase 1 report highlighted)

Test Criteria	Sub-Criteria	Scoring Criteria	Score	Narrative
Ofwat: Scalability	Is Totex>£200m over the proposed DPC duration (default 25 years)?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	**3**	**Previous score 5** – The package of 238 sites is over £950m but reducing the number of sites in the package to meet the selection hierarchy reduces to 6 sites from the AMP8 programme, the Totex of which is £212m.
	If less than £200m, can projects be bundled into an aligned programme with a single payment mechanism?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	**3**	**Previous score 5** - This is already a bundle of projects.
Ofwat: Construction	Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated?	1 - 5 (5 for totally discreet)	**3**	**Previous score 1** - To achieve a greater level of construction discreteness the AMP8 programme has been drastically reduced in number of schemes, bringing this score up significantly.
	Are there any construction risks that cannot be transferred and need to be retained?	1 - 5 (5 for none)	**3**	**Previous score 2** – By reducing the package to the largest sites only the overall construction risk is reduced however the sites included are mostly complex constrained sites and high profile e.g. sea front positions.
Ofwat: Operations & Maintenance	Are there restrictions on the transfer of regulatory obligations and if so is there a restriction on the transfer of the functions to 3rd parties?	1- 5 (5 for none, 1 if there is a restriction on transfer of functions to 3rd parties)	5	No change
	Are there significant customer/ stakeholder interface challenges that cannot be transferred?	1- 5 (5 for none)	4	**Previous score 3** – By reducing the number of sites in the package significantly the number of interfaces is also reduced.
	Can a DPC deliver required volume and quality outcomes?	1 - 5 (5 for easily)	5	No change
	Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?	1 - 5 (5 for none)	**4**	**Previous score 3** - To achieve a greater level of operational discreteness the AMP8 programme has been drastically reduced in number of schemes, bringing this score up.

Appendix 1A: F) WINEP: Storm Overflow Spill reduction AMP 9-10 Package

Interviewed: **Michael Wynn and Iain Wolsey (24/03/2023), Mark Russell (05/05/2023), Mark Russell, Claire Seymour, Michael Wynn (11/05/2023)**

AMP9-10 Programme Schemes (Package 1)

New or Replacement			New	**Start Date**	2030	**End Date**	2060	
Expenditure Profile	**Total (£m)**	**AMP 8**	**AMP 9**	**AMP 10**	**AMP 11**	**AMP 12**	**AMP 13**	**AMP14**
Development Costs*	20	20	0	0	0	0	0	0
Construction Costs	172	0	172	0	0	0	0	0
Repex#	0	0	0	0	0	0	0	0
Opex^	16	0	0	3	3	3	3	3
Totex**	207	20	172	3	3	3	3	3

Key: * The Capex values provided by YWS did not split costs into construction and design costs. It is assumed that design costs are 10% of total Capex costs and all occur in AMP8. Land and planning costs were supplied separately by YWS, and these have been added onto the 10% design costs to give the development costs shown here.
No Repex included in data provided by YWS.
^ Opex rounding to nearest £1m, Total Opex and Totex based on unrounded values.
** Totex excludes the additional YWS DPC costs for developing the project for delivery via DPC, running the procurement process and then managing the CAP over the 25-year concession.

Recommendation

AMP 9-10 Programme Package

This package is a hypothetical combination of projects from the AMP10 programme. We tried to find suitable AMP9 projects but none met our criteria (explained below). These AMP10 projects could potentially be fast tracked and brought to the market in Year 5 of AMP8, for construction in AMP9 and possibly the early years of AMP10 depending on the scale.

If it was to be a DPC it would be a late DPC. Like Appendix 1 the recommended approach to market would be a DBFM or ideally a DBFOM depending on how integrated the overflow is in the network.

Given there are three potential packages – if further work confirms the scale assumptions are correct, then there could be a rolling programme of Storm Storage DPCs incorporating these and potentially some of the remaining large storage packages. Market feedback indicates a rolling programme of DPC packages each around the £200m Totex threshold is likely to be more attractive.

The DPC Package

Potential DPC Packages

As the AMP8 programme focusses on the smallest schemes in the overall storm overflow programme, the decision was taken to review the programme for AMP9 and 10 to identify if a better DPC package could be constructed from those schemes using the same selection hierarchy as in Appendix 1.

Three possible DPC packages were identified which comprise a small number of large storm overflow solutions, grouped by geographical area to achieve over £200m Totex over a 25-year concession period. WWTW's are listed as Sewage Treatment Works (STW):

Package	Barnsley and Rotherham Area	Planned Delivery	Design and Construction Costs (£m)	Opex (£m/y)	Totex (£m)
1) Lundwood Batch	Lundwood CSO	AMP10	151	0.62	167
	Lundwood STW	AMP10	40	0.02	41
	Land & Planning Costs	AMP10	-	-	0.5
	Total		**191**	**0.6**	**207**

Package	Barnsley and Rotherham Area	Planned Delivery	Design and Construction Costs (£m)	Opex (£m/y)	Totex (£m)
2)	Aldwarke STW	AMP10	39	0.03	40
	Wombwell STW 3DWF	AMP10	156	0.02	157
	Land & Planning Costs	AMP10	-	-	0.5
	Total		**195**	**0.1**	**197**

Package	Leeds and Harrogate Area	Planned Delivery	Design and Construction Costs (£m)	Opex (£m/y)	Totex (£m)
3)	Dowley Gap STW	AMP10	50	0.02	50
	Garforth STW	AMP10	32	0.02	32
	Harrogate North STW 3DWF	AMP10	51	0.03	52
	Harrogate South STW	AMP10	65	0.03	66
	Land & Planning Costs	AMP10	-	-	1
	Total		**199**	**0.1**	**201**

The DPC Package

All of the schemes identified are from the potential AMP10 programme, as using the selection hierarchy and data provided, there was no AMP9 scheme package that appeared suitable or scalable. There could be options to combined Packages 1 and 2 into a larger c.£400m Totex DPC if required.

It is suggested that a DPC based upon these packages could be launched in late AMP8 with construction expected to commence early AMP9 (and possibly the first years of AMP10), with operation beginning in AMP10 onwards. The DPC could then run in parallel with the BAU AMP 8 and 9 programmes and achieve early delivery on some AMP10 targets.

DPC Development

The level of development of the solutions is very early stage, and there is a considerable level of work required to develop the modelling and solution selection for each location. It is therefore possible that the volumes required and the associated scheme costs may increase or decrease for the following reasons:

1. Storage volume may be decreased by increasing the associated STW capacity;
2. Sizing is currently based on achieving maximum 10 spills per year per overflow. There is also a 'No Harm' criteria to be assessed which may require greater storage volumes at sensitive sites. The methodology for assessing this has not yet been agreed;
3. The modelling relies heavily on assumptions about climate change impacts on rainfall. Any changes in the climate change assumptions could increase or decrease the required storage volumes at each location.

To ensure that the AMP10 packages proposed for DPC are sufficiently well developed, there will need to be further investigation of each individual solution which would need to be accelerated at the start of AMP8 so funds would need to be set aside for that.

Operation and Maintenance

This package has very low Opex compared to other potential DPCs as the storm tanks require minimal power, consumables or operational input. The selection of storage at the end of the sewer network limits operational interfaces and risks however there would need to be a careful definition of responsibilities in relation to spills, as it is expected that the regional average spill reduction to 10 spills per year will become an ODI.

BAU Procurement Arrangements

The storm overflow programme from AMP8 onwards is significantly larger than any similar programme of network storage that has been delivered previously and the AMP9 and AMP10 programmes are larger still. The grey infrastructure solutions required are well understood and deliverable, but market resource constraints are considered a risk.

Assessment against Criteria (with changes from Phase 1 report highlighted)

Test Criteria	Sub-Criteria	Scoring Criteria	Score	Narrative
Ofwat: Scalability	Is Totex>£200m over the proposed DPC duration (default 25 years)?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	4	Not evaluated in Phase 1 Report. For the schemes from the AMP 9-10 Programme package there is the potential to build a package that reaches £200m Totex. However, of the three AMP9-10 batches presented in this report, one – Aldwarke and Wombwell STW 3DWF group – has a Totex value of £197m, slightly below the Ofwat threshold.
	If less than £200m, can projects be bundled into an aligned programme with a single payment mechanism?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	4	The packages are all bundles of storm overflow projects in geographical proximity to each other. In order to increase the Totex values of the AMP9-10 batches, less optimal sites from wider geographical areas would have to be selected.
Ofwat: Construction	Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated?	1 - 5 (5 for totally discreet)	3	Not evaluated in Phase 1 Report. To achieve a greater level of construction discreteness the projects selected from the AMP 9-10 programme are the largest and most discrete elements that can be identified, bringing this score up significantly.
	Are there any construction risks that cannot be transferred and need to be retained?	1 - 5 (5 for none)	4	Not evaluated in Phase 1 Report. By defining the package based on a small number of the largest sites the overall construction risk is reduced.
Ofwat: Operations & Maintenance	Are there restrictions on the transfer of regulatory obligations and if so is there a restriction on the transfer of the functions to 3rd parties?	1- 5 (5 for none, 1 if there is a restriction on transfer of functions to 3rd parties)	5	Not evaluated in Phase 1 Report.
	Are there significant customer/ stakeholder interface challenges that cannot be transferred?	1- 5 (5 for none)	4	Not evaluated in Phase 1 Report. By reducing the number of sites in the package significantly the number of interfaces is also reduced.
	Can a DPC deliver required volume and quality outcomes?	1 - 5 (5 for easily)	5	Not evaluated in Phase 1 Report.
	Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?	1 - 5 (5 for none)	4	Not evaluated in Phase 1 Report. To achieve a greater level of operational discreteness the largest and most discrete projects have been selected, bringing this score up.

Appendix 2: (p) WTW

Interviewed: **Suzanne Dunn, Granville Davies (14/03/2023), Ian Watts and David Taylor (27/04/2023)**

New or Replacement			New	**Start Date**	2025/26	**End Date**	2062	
Expenditure Profile	**Total (£m)**	**AMP 8**	**AMP 9**	**AMP 10**	**AMP 11**	**AMP 12**	**AMP 13**	**AMP 14**
Development Costs*	25	25	0	0	0	0	0	0
Construction Costs	176	152	24	0	0	0	0	0
Repex	34	0	0	0	0	0	34	0
Opex	120	0	19	24	24	24	24	5
Totex**	355	177	43	24	24	24	58	5

Key: * The Capex values provided by YWS did not split costs into construction and design costs. It is assumed that design costs are 10% of total Capex costs and all occur in AMP8. Land and planning costs were supplied separately by YWS, and these have been added onto the 10% design costs to give the development costs shown here.

** Totex excludes the additional YWS DPC costs for developing the project for delivery via DPC, running the procurement process and then managing the CAP over the 25-year concession.

Recommendation

WTW is considered to be a suitable candidate for DPC. The project is considered suitably discrete, of the correct scale and with limited Operation & Maintenance and construction risks. The main construction risk will be ground condition risk for the c.90km of transfer mains to the South of the YWS supply area and potentially the c.18km raw water supply from the river to the WTW. There is some uncertainty within YWS about the principal drivers which the project is intended to achieve and the associated delivery dates. Thus, there is further work required to confirm this and fix timescales for delivery with any short-term targets mitigated in another manner to suit DPC procurement.

If it was to be a DPC it would be an early or late DPC. The recommended approach to market would be a DBFOM.

Context

Background

YWS has a long-term water supply contract with Severn Trent Water to supply water to Rivelin WTW from the Upper Derwent Valley Reservoir Group. The current agreement includes a break clause in 2035 where Severn Trent Water may terminate the transfer if required to maintain supplies to its own customers. It is possible that after this date YWS will lose this water supply, and additional water resource capacity would be required to avoid a deficit in supply. Both Severn Trent Water and YWS are exploring options through the Upper Derwent Valley Expansion Strategic Resource Options (UDVRE SRO) process. Severn Trent Water are investigating options that would permit extension of the water sharing agreement beyond 2035, including increasing the capacity of several reservoirs. YWS are investigating possible alternatives to backfill, one of which is creation of a new WTW near [redacted] outside York and a new transfer main to deliver increased flows to South Yorkshire.

The additional capacity provided by the new WTW could also have potential benefits in helping deal with supply and demand deficits across the region, it would also provide operational flexibility for periods when the existing [redacted] WTW is affected by maintenance or emergency repairs. A second WTW connecting to the existing network and potential interconnections from the new transfer main south into the regional grid could also be used to increase the resilience of the network and reduce the risks Customer Minutes Lost (CML) which is a regulatory measure.

Initial stages of the UDVRE SRO indicate that extension of the reservoirs may be difficult, therefore there is a reasonable likelihood that the backfill options will be required, and given the additional benefits, it is possible that a second WTW would be constructed regardless of the outcome of the SRO. The new WTW and bulk water transfer could potentially be considered for DPC either together as a package or individually, but the Totex for other WTW's Totex is £148m, below Ofwat's £200m Scalability Threshold.

DV8(v) Increase WTW capacity to existing Site footprint capacity

This project would utilise spare licenced abstraction capacity at Acomb Landing WTW and build an bulk raw water transfer to a new WTW , sized to provide an additional 50 Megalitres/day (ML/d) into supply. The decision has been made to build a new WTW rather than expand the existing WTW because it will improve the resilience of the network and allow planned maintenance works to be conducted more effectively.

Delivery period is currently estimated at 6 years' but this excludes planning application period. Market consultation indicated contractors anticipate they could deliver more quickly.

Totex for this element of the work is £149m (Development Costs £10m; Construction Costs £78m; Opex £42m; Repex £19m).

DV8(iv) WTW to South Yorkshire treated water transfer

This project will be a new treated water transfer pipeline with capacity to move 50MLD from York area to South Yorkshire. There are a number of options for the routing the pipeline could take. The first is a direct transfer from York to Rivelin WTW via Hoober Service Reservoir with minimal connections to other existing gird or network assets. This would require over 90km of transfer main, booster pumping stations and associated break pressure tanks.

The second option being considered seeks to enhance the resilience benefits that the transfer can offer by amending the pipeline route to provide greater connectivity to the existing YWS supply system. This option may comprise a 93km pipeline towards Selby, Leeds and the south towards the Sheffield supply area, to enable transfer of flows to more locations and balance supplies. New pumping stations and break pressure tanks would be required and there is potential to twin some sections or provide additional grid connections along the route.

At present the dWRMP indicates project start in 2029/30, with operations commencing in 2035/36. Delivery period is given as four years, but this is excluding the planning application period. Totex for this element of the work is £206m (Development Costs £15m; Construction Costs £97m; Opex £78m; Repex £16m).

DPC Development

Context

At present the dWRMP indicates a need for benefits from the new WTW for local supply/ demand imbalance to begin in 2030, with the bulk transfer main being required from 2035, however these timescales are being reviewed. The key considerations are:

1. What drives the 2030 deadline and is there any flexibility within that date?
2. Are those timescales achievable by conventional procurement routes and / or DPC?
3. Could alternative measures bridge the gap between desired benefits and expected delivery date?

YWS will need to understand and prioritise the many different drivers that apply to this project and ensure that realistic and manageable timescales are developed for the project.

Operation and Maintenance

The ideal solution for the WTW and the water transfer from the river to the WTW would be a DBFOM with operations remaining with the CAP. As the transfer main has potentially more interfaces with other assets on the network, YWS may wish to consider if this is included or excluded from the operational responsibilities of the CAP, i.e. the main becomes a DBFM.

BAU Procurement Approach

These projects fall within YWS and framework contractor's capabilities, similar projects have been delivered in the past. The project is under early stages of development, so the location of the WTW and routes for the transfer main are not yet determined, so there is a reasonable element of development still required to confirm the scope required.

Assessment against Criteria (with changes from Phase 1 report highlighted)

Test Criteria	Sub-Criteria	Scoring Criteria	Score	Narrative
Ofwat: Scalability	Is Totex>£200m over the proposed DPC duration (default 25 years)?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	5	If the Severn Trent Water supply to South Yorkshire is discontinued, a combination of a new WTW at [redacted] plus a new transfer pipeline to South Yorkshire may be required to replace the supply capacity. As a bundle these two projects exceed £200m. However, the WTW with the river transfer main on its own has a Totex of £148m, which is below the Ofwat £200m Totex threshold. Nevertheless, market insight is even the WTW on its own would still be attractive and perceived as less risky than the two projects combined.
	If less than £200m, can projects be bundled into an aligned programme with a single payment mechanism?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	5	The two schemes are already above £200m so there is no need to look for other projects.
Ofwat: Construction	Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated?	1 - 5 (5 for totally discreet)	4	If the preferred option is a new WTW to provide the additional capacity, this, combined with the transfer pipeline, would be a very discrete project and interfaces easily managed by DPC.
	Are there any construction risks that cannot be transferred and need to be retained?	1 - 5 (5 for none)	4	The main risk remains the construction of the 90km transfer main and archaeology, ground conditions that may be encountered. This is manageable in the contract but requires careful attention.
Ofwat: Operations & Maintenance	Are there restrictions on the transfer of regulatory obligations and if so is there a restriction on the transfer of the functions to 3rd parties?	1- 5 (5 for none, 1 if there is a restriction on transfer of functions to 3rd parties)	5	Not aware of any. DWI water quality compliance is assumed.
	Are there significant customer/ stakeholder interface challenges that cannot be transferred?	1- 5 (5 for none)	**3**	**Previous Score 4** – Reduced for consistency with [redacted] Stakeholder interfaces to be retained by YWS include: • Land purchase for WTW and abstraction • Access agreements and easements for raw water transfer and then the treated water transfer main to the South • Abstraction licence, discharge consents, environmental approvals There is merit in YWS retaining planning permission risk to secure outline planning as without that the risks to the DPC will be too high. However, with any project which has an Output Specification (as opposed to a Design Specification) the CAP will need to reapply for Final Planning permission, but this should be procedural if YWS outline planning application is carefully crafted.
	Can a DPC deliver required volume and quality outcomes?	1 - 5 (5 for easily)	5	DPC should offer efficiency if given freedom to innovate and adjust the design of the plant for optimum Totex.
	Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?	1 - 5 (5 for none)	4	Interfaces may include: • Shared water supply connections and treated water storage with [redacted] WTW • Supply network connections

Appendix 3: (q) [redacted]

Interviewed: **dWRMP- Suzanne Dunn, Granville Davies (14/03/2023), WSS - Ian Watts (17/03/2023), [redacted] WTW - Ian Watts and David Taylor (28/04/2023)**

New or Replacement			New	**Start Date**	2025/26	**End Date**	2057	
Expenditure Profile	**Total (£m)**	**AMP 8**	**AMP 9**	**AMP 10**	**AMP 11**	**AMP 12**	**AMP 13**	**AMP14**
Development Costs*	17	17	0	0	0	0	0	0
Construction Costs	147	116	31	0	0	0	0	0
Repex	18	0	0	0	1	0	16	0
Opex	72	0	9	14	14	14	14	6
Totex**	253	134	40	14	14	14	14	6

Key: * The Capex values provided by YWS did not split costs into construction and design costs. It is assumed that design costs are 10% of total Capex costs and all occur in AMP8. Land and planning costs were supplied separately by YWS, and these have been added onto the 10% design costs to give the development costs shown here.

** Totex excludes the additional YWS DPC costs for developing the project for delivery via DPC, running the procurement process and then managing the CAP over the 25-year concession.

Recommendation

This scheme is considered to be a suitable candidate for DPC. The project is considered suitably discrete, of the correct scale and with limited Operations & Maintenance and construction risks. The project would be considered viable, attractive and deliverable by a CAP and the timescales are suitable for DPC.

If it was to be a DPC it would be a late DPC. The recommended approach to market would be a DBFOM.

Context

Background

At present many customers rely on [redacted] as their only water supply. YWS has an internal policy ambition to improve resilience of its water supply operations so that no treatment works shall supply more than 75,000 properties without an alternative supply option and [redacted] falls within this category. [redacted] is also one of YWS' older WTWs and in need of significant repair and upgrade works. It is difficult to take the plant offline to undertake these works because of the lack of alternative supplies to customers. This potential DPC package is intended to reduce this risk.

New 75 Ml/d Offsite WTW and 150 Ml New Storage

A new 2 WTW with treatment capacity of 75MLD and 150 ML of additional treated water storage in two treated water reservoirs. This option will increase local capacity but also reduce the risk of loss of supply in the event of failures at [redacted] This additional resilience would allow for better flexibility to perform maintenance and keep existing assets in good condition.

Totex for this element of the work is £253m (Development Costs £17m; Construction Costs £147m; Opex £71m; Repex £18m).

DPC Development

The WSS Resilience Strategy is based upon achieving improved resilience for customers. At this point the solution could comprise one or two large projects (such as the proposed [redacted]) or potentially by a portfolio of smaller works upgrades, mains twinning or replacement activities. These options will need to be very carefully assessed to ensure that the selected solution is optimal and provides appropriate levels of resilience. If it is decided that the package of smaller projects offers better value for money the new [redacted] project may not proceed or might be considered for longer term investment, not AMP8.

Originally this DPC package also included a new Abstraction from the , this has now been removed as it is no longer the preferred solution to the particular operational risk YWS are addressing.

Operation and Maintenance

The ideal solution for the WTW would be a DBFOM. If YWS wanted to maintain overall control of the raw water and treated water connections it could retain operations of interfaces elements, potentially including the storage systems, which would become a DBFM.

BAU Procurement Approach

These projects fall within YWS and framework contractor's capabilities, similar projects have been delivered in the past. The project is under early stages of development, so the location of the WTW is not yet determined. There is still a reasonable element of development required to confirm the final scope.

Assessment against Criteria (with changes from Phase 1 report highlighted)

Test Criteria	Sub-Criteria	Scoring Criteria	Score	Narrative
Ofwat: Scalability	Is Totex>£200m over the proposed DPC duration (default 25 years)?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	5	The value of the new WTW is sufficient to meet the scalability test.
	If less than £200m, can projects be bundled into an aligned programme with a single payment mechanism?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	5	N/A
Ofwat: Construction	Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated?	1 - 5 (5 for totally discreet)	4	Yes. The selected option of an offsite, offline WTW construction would be discrete from existing facilities and limit impact on existing work to a minimum.
	Are there any construction risks that cannot be transferred and need to be retained?	1 - 5 (5 for none)	**5**	**Previous score 4.** For offsite options then YWS would need to buy the land in advance of the DPC. Apart from that there would be few construction risks that could not be transferred.
Ofwat: Operations & Maintenance	Are there restrictions on the transfer of regulatory obligations and if so is there a restriction on the transfer of the functions to 3rd parties?	1- 5 (5 for none, 1 if there is a restriction on transfer of functions to 3rd parties)	5	None aware. DWI water quality compliance is assumed.
	Are there significant customer/ stakeholder interface challenges that cannot be transferred?	1- 5 (5 for none)	3	Stakeholder interfaces to be retained by YWS include: • Land purchase for WTW • • Discharge consents, environmental approvals There is merit in YWS retaining planning permission risk to secure outline planning as without that the risks to the DPC will be too high. However, with any project which has an Output Specification (as opposed to a Design Specification) the CAP will need to reapply for Final Planning permission, but this should be procedural if YWS outline planning application is carefully crafted.
	Can a DPC deliver required volume and quality outcomes?	1 - 5 (5 for easily)	5	Yes. To create maximum cost efficiency opportunities, the project should be tendered with an output specification. This type of output-based project has been successfully undertaken through DBFOM in Scotland and Northern Ireland and with Design Build Operate Maintain (DBOM) in Ireland.
	Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?	1 - 5 (5 for none)	4	Interfaces may include: • Shared water supply connections • Shared treated water storage with • Supply network connections

Appendix 4: (r) Ilkley WWTW

Interviewed: Mike Wynn, Graham Weston, Leah Humphries (16/03/2023), (05/05/2023)

New or Replacement			New	**Start Date**	2025	**End Date**	2055	
Expenditure Profile	**Total (£m)**	**AMP 8**	**AMP 9**	**AMP 10**	**AMP 11**	**AMP 12**	**AMP 13**	**AMP14**
Development Costs*	8	8	0	0	0	0	0	0
Construction Costs	64	64	0	0	0	0	0	0
Repex	13	0	0	0	0	2	11	0
Opex	6	0	1	1	1	1	1	0
Totex**	90	72	1	1	1	3	12	0

Key: * The Capex values provided by YWS did not split costs into construction and design costs. It is assumed that design costs are 10% of total Capex costs and all occur in AMP8. Land and planning costs were supplied separately by YWS, and these have been added onto the 10% design costs to give the development costs shown here.

** Totex excludes the additional YWS DPC costs for developing the project for delivery via DPC, running the procurement process and then managing the CAP over the 25-year concession.

Recommendation

As specified currently, the scheme is unlikely to suit a DPC because the delivery is required by 2026.

The package is also below the £200m target for Totex, however market engagement suggests that smaller schemes may be considered by both investors and contractors, particularly until the market gains maturity. Even if Ilkley is procured though other routes, the concept of an offline construction of wastewater treatment plant is one that should be considered if other projects of this type are identified in AMP9 or later programmes.

If it was to be a DPC it would be a late DPC. The recommended approach to market would be a DBFOM.

Context

Background

As part of the drive to achieve improved river water quality for the bathing water designation on the river Wharfe at Ilkley, there is an option to replace two existing WWTWs with a single new treatment works delivering higher standards of treatment for all flows. The scope of this package would include:

- Construction of a new transfer pumping station and transfer sewer;
- New WWTW which may replace both Ilkley WWTW and Burley WWTW with increased capacity.

Totex for this scheme is estimated at around £90m.

The timescales for delivery of this project would be tied into the wider Ilkley Bathing Waters programme and therefore would require delivery by the DWI 2026 deadline. This presents a problem for DPC although the concept of an offline construction of a wastewater treatment plant is generally suitable for DPC.

BAU Procurement Approach

YWS would procure this work through a direct Framework award or a competitive tender amongst its Framework contractors.

Assessment against Criteria (with changes from Phase 1 report highlighted)

Test Criteria	Sub-Criteria	Scoring Criteria	Score	Narrative
Ofwat: Scalability	Is Totex>£200m over the proposed DPC duration (default 25 years)?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	2	The Totex estimate of £100m is below the target threshold of £200m.
	If less than £200m, can projects be bundled into an aligned programme with a single payment mechanism?	1-5 (5 for clearly >£200m, 3 for just about £200m (i.e. >£180m)	2	No obvious bundling opportunities have been identified which do not significantly increase the complexity of construction or operation.
Ofwat: Construction	Discreteness test: Is the project/ programme sufficiently separable so there are no significant construction interface issues which cannot be cost-effectively managed or mitigated?	1 - 5 (5 for totally discreet)	4	If the new Burley/Ilkley WWTW is constructed offline and separate to the existing works then the construction risks and interfaces are relatively limited. The pumping station and transfer main would require works within highways and third party land and therefore has additional stakeholder interfaces but not especially complex. Main construction interfaces would be with the existing sewer networks and would increase if the wider CSO projects are included in a bundle.
	Are there any construction risks that cannot be transferred and need to be retained?	1 - 5 (5 for none)	4	Land ownership and planning risks may be retained by YWS.
Ofwat: Operations & Maintenance	Are there restrictions on the transfer of regulatory obligations and if so is there a restriction on the transfer of the functions to 3rd parties?	1- 5 (5 for none, 1 if there is a restriction on transfer of functions to 3rd parties)	5	None aware
	Are there significant customer/ stakeholder interface challenges that cannot be transferred?	1- 5 (5 for none)	4	All bathing water projects are high public profile and have extensive stakeholder and public interfaces with reputational risks that would be retained by YWS.
	Can a DPC deliver required volume and quality outcomes?	1 - 5 (5 for easily)	5	This should be possible
	Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?	1 - 5 (5 for none)	4	The new Burley/Ilkley WWTW will be new and separate from the two previous WWTWs so the operation and maintenance risks and interfaces are relatively limited. Main operational interfaces would be with the existing sewer networks and would increase if the wider CSO projects are included in a bundle.

Appendix 5: DPC Data Table for Ofwat requirements (£m 2022/23 prices)

SUP 12.1	SUP 12.6	SUP 12.7	SUP 12.8					SUP 12.9							SUP 12.10	SUP 12.11	SUP 12.12	SUP 12.13	SUP 12.14				
Project name	Assessed as suitable for DPC	Whole life Totex*	Total AMP 8 Project development costs (£m)**					Total construction costs (£m)***							Annual Opex (£m)	Asset type	Asset life (years) #	Year operation begins	Total AMP8 DPC related costs (£m) ^				
			2025-26	2026-27	2027-28	2028-29	2029-30	2025-26	2026-27	2027-28	2028-29	2029-30	Total AMP9	Total AMP10					2025-26	2026-27	2027-28	2028-29	2029-30
F - WINEP – Storm overflow spill reduction AMP8	Yes	211.9	1.6	5.2	5.3	4.9	5.1	13.6	31.0	44.2	40.8	42.3	14.1	0.0	0.2	CSO	80	2029	0.8	0.8	0.8	0.8	0.8
																WWTW	80						
																SPS	80						
F(A) - WINEP – Storm overflow spill reduction AMP 9-10 Schemes	Yes	207.5	0.0	0.0	0.0	10.0	9.5	0.0	0.0	0.0	0.0	0.0	171.9	0.0		CSO	80	2035	0.8	0.8	0.8	0.8	0.8
																WWTW	80						
P -	Yes	355	1.4	3.4	8.9	6.1	5.3	11.0	14.8	38.0	47.5	40.7	23.6	0.0	4.8	WTW	63	2032	1.4	1.4	1.4	1.4	1.4
																Mains	69						
Q-[redacted]	Yes	253	1.9	3.4	2.9	4.3	4.6	18.0	24.0	27.0	25.6	21.8	30.8	0	2.8	WTW	66	2032	1.0	1.0	1.0	1.0	1.0
R - Ilkley WWTW	No	90.2	0.6	2.2	2.1	1.9	0.9	5.0	15.2	19.1	16.7	8.2	0.0	0.1	0.2	WWTW	65	2030	0.4	0.4	0.4	0.4	0.4

* **SUP12.7: Whole life Totex**. These are assumed as the sum of Project Development Costs, Construction Costs and Opex and Repex (lifecycle/ capital maintenance) costs provided by YWS for 25-years of operations, that being an anticipated DPC duration.

** **SUP12.8: Project development costs**. These are costs to design the project, obtain planning consents and to acquire land. At this early stage of development, no consideration has been taken of a need for AMP8 enabling works or interface works, such costs being assumed subsumed within the Capex costs YWS has provided. For each project, the design costs have been estimated at 10% of the Capex expenditures YWS provided. Land costs have been estimated by YWS's Estates Team and added onto the design costs. All Development Costs have been put into AMP8.

*** **SUP12.9: Total construction costs.** During the build phase construction costs are estimated at 90% of the Capex expenditures YWS has provided. YWS has also included Repex (Replacement Expenditure) which is also called Lifecycle costs after the construction period. These are the costs for replacing or refurbishing the assets during the project's life, for example some mechanical and electrical components in a Water Treatment Works may need replacing every 15-25 years, whilst most civil and structural elements will have a longer asset life.

\# Asset life data is as provided by YWS for each project, reflecting the average asset life of the components.

^ **SUP12.14: Total AMP8 DPC related costs**. A value of 2% of the **SUP12.7: Whole life Totex** is assumed, noting that the whole life costs in SUP12.7 do not include these additional YWS DPC related costs. These are the costs to develop the project for delivery via DPC and run the procurement process. As no project is operational in AMP8 no costs of managing the CAP are included in the 2% estimate

Appendix 6: Ofwat tests and Value for Money scoring

Phase 1 Scoring

	Project/ Programme	DPC Totex (£m)	Ofwat tests: Phase 1: Ofwat Tests — Ofwat Scalability: Totex>£200m	Ofwat Scalability: Totex >£200m bundled	Ofwat Construction: Discreteness test	Ofwat Construction: Construction risks	Ofwat Operations and Maintenance Risk: Transfer of regulatory obligations	Ofwat Operations and Maintenance Risk: Stakeholder interface challenges	Ofwat Operations and Maintenance Risk: Volume and quality outcomes	Ofwat Operations and Maintenance Risk: Operational interface issues	TOTAL SCORE	Recommendation/ Key rejection factor
P	[redacted]	228	5	5	4	4	5	4	5	4	36	Shortlist
Q	[redacted]	367	5	5	4	4	5	3	5	4	35	Shortlist
R	Ilkley WWTW	131	2	2	4	4	5	4	5	4	30	Scalability, few/ any bundling opportunities and need to check EA 20276/27 date
F	WINEP: Storm Overflow Spill Reduction	638	5	5	1	2	5	3	5	3	29	Discreteness across many sites, but possible potential to bundle similar larger investments

Phase 2 Scoring

	Project/ Programme	DPC Totex (£m)	Ofwat tests: Phase 1: Ofwat Tests (re-validated) — Ofwat Scalability: Totex>£200m	Ofwat Scalability: Totex >£200m bundled	Ofwat Construction: Discreteness test	Ofwat Construction: Construction risks	Ofwat Operations and Maintenance Risk: Transfer of regulatory obligations	Ofwat Operations and Maintenance Risk: Stakeholder interface challenges	Ofwat Operations and Maintenance Risk: Volume and quality outcomes	Ofwat Operations and Maintenance Risk: Operational interface issues	TOTAL SCORE	Recommendation/ Key rejection factor	VfM tests: New Phase 2: Value for Money Assessment — A) VfM Financing Costs: Financing Costs	A) VfM Financing Costs: Market Appetite	A) VfM Financing Costs: Bankability	A) VfM Financing Costs: Risks	B) VfM Cost Efficiencies: Cost Savings Due to Efficiency	B) VfM Cost Efficiencies: Procurement and Bid Costs	B) VfM Cost Efficiencies: Cost of Interoperability	B) VfM Cost Efficiencies: Risk and Cost of Failure	C) VfM Innovation Opportunities: Technology	C) VfM Innovation Opportunities: Complexity	D) VfM Lead Time: Lead Time	TOTAL SCORE: As Described	TOTAL SCORE: Construction Period Reduced	Recommendation VfM Potential: Positive Value for Money Potential
Q	[redacted]	253	5	5	4	5	5	3	5	4	36	Suitable	L	M	H	M	H	L	H	L	H	H	L	M	M/H	Good
P	[redacted]	355	5	5	4	4	5	3	5	4	35	Suitable	L	M	H	M	H	L	H	L	H	H	L	M	M/H	Good
F(A)	WINEP: Storm Overflow Spill Reduction - AMP 9-10 Package	207	4	4	3	4	5	4	5	4	35	Suitable	L	M	H	M	M	L	H	M	M	M	M	M	M	Good
R	Ilkley WWTW	90	2	2	4	4	5	4	5	4	30	Unsuitable; scalability issues, and confirmation delivery by 2026 required.	L	M	M	M	H	L	H	L	M	M	M	M	M	Good
F	WINEP: Storm Overflow Spill Reduction - AMP 8 Package	212	3	3	3	3	5	4	5	4	30	Unsuitable; scalability issues as reduced package to increase discreteness.	L	M	H	M	M	L	H	L	M	M	L	L/M	M	Limited

Represents a change to score from Phase 1 to Phase 2

Appendix 7: Ofwat DPC Risk Allocation

Ofwat has provided guidance on its assessment of where risks should reside within a DPC framework. This is contained in Chapter 4 (Commercial framework) of the March 2023 publication '**Guidance for Appointees delivering DPC projects'**. The principle is that the party best able to manage the risk should do so (i.e. the party that can manage the risk most cheaply, whether by having the ability to mitigate risks, pay for insurance, or use its balance sheet to self-insure or other ways).

In the subsections below Ofwat default risk allocation is defined in more detail.

Development Risk

Ofwat Default

The Ofwat default is that risks are largely borne by YWS as it is likely the projects will be tendered using the Late Stage model, i.e. it will likely be the responsibility for YWS to buy any land needed (labelled **Land**), negotiate any easements and wayleaves for mains and at least secure outline planning permission (labelled **Planning**). Further, additional consents, such as abstraction and discharge licences will likely fall within YWS responsibility, however, to complete the applications some design information may be required from the CAP (labelled **Consents**).

The Ofwat guidance also says that some of the costs may be shared with Customers through higher costs, if for example land purchases end up being much more expensive than anticipated, or a very conditional planning approval is granted requiring significant extra investment to meet conditions.

Market Acceptance

There is no reason to suggest that on any of the four projects under consideration the Development Risk allocation would need to be significantly different from the Ofwat default. This was confirmed through our initial soundings with the market.

Construction and Asset Delivery Risks

Ofwat Default

Ofwat's view is that the Appointee alone should bear the risks that its project needs are incorrectly specified (labelled **Works Information**) and the interfaces that will be required between the CAP and YWS during the construction phase (labelled **Interfaces With Appointee's Existing Assets**), for example, operating procedures that YWS staff need to perform at the site.

Risks that Ofwat believe should be solely the CAP's risk are **Site Conditions** on greenfield sites, preparing a detailed design that does not meet requirements (labelled **Detail Design**) or not building the facility correctly (labelled **Commissioning**).

If the project is late in being delivered (labelled **On-time Delivery**) the CAP will not receive any payments until the asset is operational. However, it is possible that there may be some additional costs for YWS e.g. if the late delivery of an asset requires YWS to mitigate the delay by temporary works to other sites incurring cost. Normally this would be dealt with using late delivery penalties, but there may be some costs that cannot be reimbursed; hence Ofwat propose that the CAP and/or the Appointee should pay depending on the circumstances.

Just as **On-time Delivery** is to be shared between YWS and the CAP, there could be third party issues that are hard to control (labelled **Third parties**), which could include:

- the Appointee not meeting its timelines for passing land to the CAP, although this could be included within the Development Risk **Land** title;
- delays due to other utilities or local authorities not allowing access to highways or other routes for laying pipes at particular times;
- customer management which may be a joint effort between YWS and the DPC contractor in informing customers and other stakeholders of works being undertaken. Here YWS would provide the direct customer link and the DPC contractor should use considerate contractor practices to minimize disturbances to customers.

There are two instances where Ofwat suggest the Customer may need to contribute. These are **Cost Overruns** where the works cannot be completed to budget (where the risks may lie with the Customer, the Appointee or the CAP depending on the circumstances) and **Changes in Scope** (which may be shared between the Appointee and the CAP depending on the reason for the change).

Regarding **Cost Overruns**, if the DPC contract allows for Target Cost pricing then the CAP bidders are likely to submit their bids with such a structure. With a Target Cost model risks may be shared between the Appointee, the Customer and the CAP depending on the cause. The introduction of Target Cost models is partly a result of the British construction industry pushing back on committing to Lump Sum Engineering Procurement and Construction (EPC) contracts. However, feedback from the interviews is that there are still large European construction companies who are prepared to offer Lump Sum EPC contracts. YWS will be aware of Target Cost pricing, but for completeness Box 3 explains Target Cost pricing in more detail and its advantages and disadvantages.

For the latter, **Changes in Scope**, an example could be given where there is an unanticipated change in law that just applies to the water sector which will require significant adapting of the facility. Here the Customer should bear the risk, but another example could be where the Appointee late in construction phase realises it forgot the include some requirement.

Lastly, Ofwat's view is that **Interfaces with Appointee's Existing Assets** should be borne by the Appointee, which is appropriate.

Market Acceptance

There was near unanimous acceptance amongst the nine companies we spoke to of the Ofwat risk allocation proposals, although clearly in reality once projects are scoped out there may be market disagreement on the specifics on risk allocation. The only exception was one of the investors stated it was prepared to accept all **Cost Overrun** risk. However, we believe when it comes down to an actual project the view may change to this mixed allocation. For instance, participants have explained there are varying degrees of reluctance by construction companies to being prepared to bid non-inflation linked Lump Sum contracts, and if that is the case then the investors' position would have to change, unless the CAP was prepared to take the risk itself, possibly by adding on a very large risk contingency to its pricing.

It is also possible, that depending on the characteristics of Project P ([redacted] that it may be VfM for Customer to take site condition risk for the c.90km of transfer mains to the south of [redacted] depending on the degree of access to sites, site topography, etc.

Box 3: Lump Sum and Target Cost Pricing

The majority of PFI and PPP schemes are priced on a Lump Sum basis. More recently Target Cost Pricing is being adopted.

Lump Sum and DPC

In Lump Sum contracts the contractor quotes a fixed price for the Capex elements, which will include the known costs, estimated costs, and an allowance for risks which may occur during the delivery period. This is then built into the overall pricing mechanism from the CAP to the customer.

The assumption is that contractors are better able to identify, quantify and manage the risks of a project than the client, so using a lump sum fee should give a relatively efficient risk allocation to the project as a whole.

The cost to the client/customer is a higher price than they may have achieved if they had taken risk ownership themselves, but the benefit is lower risk exposure. The client and customer will not have full visibility of the actual costs, and what profit or loss was made.

For PFI/PPP or DPC the inclusion of the financing element to the project works best where there is certainty on costs, so a Lump Sum mechanism is most suited. The main challenge of Lump Sum for DPC is that in an unstable market or high inflationary economy, the contractor's risk allowance within the quoted price will increase as the contractor seeks to protect themselves against higher risk of cost overrun. So, whilst there may be an appetite for Lump Sum contracts within the construction market, the financing costs may be higher and therefore the overall CAP annual payment may be greater.

Target cost and DPC

Target cost pricing is an incentivisation mechanism which shares risks and benefits of cost variation between the contractor and client through a pain gain mechanism.

In a Target Cost model the relationship is open book with the contractor supplying invoices for all large work orders, so the client understands the actual costs. In an environment where costs may be volatile, this ensures justification for any increases in cost to the client, and also the shared pain reduces the likelihood of overpricing due to uncertainty in a Lump Sum.

The main challenge of target cost for DPC is that lenders dislike uncertainty of the Capex required and there may be cost implications for financing if funders have to make allowance for the chance of the target cost being exceeded.

Contract Selection

While traditionally Lump Sum costs have been applied to PFI/PPP projects there is a difficult balance to be assessed, particularly in an inflationary environment, and it will depend on market competitiveness and conditions at the time of tender which model is most able to deliver VfM for DPC.

It will be a case of weighing the higher (on average) Capex of a Lump Sum delivery, with the potential increase in financing cost due to the retained uncertainty in a Target Cost model. Further detailed investigation should be undertaken during the procurement planning stages to identify which model is suitable.

Operational Risks

Ofwat Default

With similar principles to those for construction risks, Ofwat suggests that the risk of higher than anticipated operating and maintenance costs (labelled **Cost: Opex and Maintenance**), failures to operate the asset correctly (labelled **Operational Performance**) or the risk that significant remediation works is needed to transfer the asset back to the standards required at the end of the contract (**Condition of Asset/ Hand Back Risk**) should all lie with the CAP.

There are two risks which Ofwat suggests will be split between the CAP and the Appointee depending on circumstances. They are:

- **Compliance with Statutory and Regulatory Obligations Which Impact the Scope of the Project.** There may be some services the CAP performs where the Appointee cannot contract out of its regulatory or statutory obligations for a CAP's failure. In these cases, the CAP may have to bear some of the risk, e.g. fines, but the CAP should have responsibility for delivering the services and be penalised for not doing so with performance deductions. It is also possible the Appointee will try to pass the cost of Outcome Delivery Incentive (ODI) or Price Control Deliverable (PCD) fines and deductions onto the CAP where the CAP is singularly responsible.
- **Defects During Operations**. We are not sure of the rationale for an Appointee being liable for defects during operations unless the project is a DBFM contract rather than a DBFOM. Here the Appointee is taking operating risk, for example for CAP pipeline projects where the Appointee may operate the network and the CAP may be able to argue that the Appointee has not operated the system correctly which has caused faster than anticipated deterioration.

Ofwat proposes three risks are shared between the Appointee and the Customer, namely **Demand Risk** (use of the facility is more or less than anticipated), **Over-utilisation** (like demand risk) where overuse of an asset means it needs to be maintained more often or has a shorter economic life, and **Changes in Scope** with the Appointee taking the risk if it mis-specified the requirements, or by Customers if there is a change in law specific to the water industry (for example laws about water quality that were not anticipated at the time of tender preparation).

The last case Ofwat considers is **Value Testing**. This is where the DPC contract may include a requirement for the CAP to tender (or benchmark) particular operational functions say every five or seven years, with cost increases or decreases being passed onto Customers. This is common in PFI Schemes where Soft FM (the caretaking, cleaning, catering and grounds maintenance of schools, hospitals, etc) is retendered or benchmarked every five or seven years. This means the CAP is exposed to Opex risks for shorter periods of time.

Market Acceptance

Interviewees correctly also raised there may be cases where if the selected CAP model is a Design Build Finance Maintain (DBFM) then the operational risks would lie with YWS.

During the interviews a few participants explained the impact of higher electricity prices on projects they have invested in. The water industry is responsible for about 3% of the UK's electricity consumption[11]. Similarly, the water industry uses large amounts of chemicals. Covid, Brexit and the impacts of the Ukraine War have pushed up both these prices. Therefore, interviewees advised that if annual operational costs (as opposed to Repex costs) are a material contributor to the Annual CAP charge then there is merit in linking operational costs to an index. An alternative could be benchmarking or market testing through the **Value Testing** route.

Financial Risks

Ofwat Default

Normally on PPP projects the investor (the CAP in this case) bears financing risks (labelled **Financing Costs**) and mitigates this by fixing interest rates on the day of financial close so the CAP's annual interest and debt repayments are fixed. If bank debt is used then commonly the interest rate margin above market interest rates is higher during the construction phase than the margin during the operational period. This is because once an asset is built and operational many of the risks disappear. However, Ofwat conceive of cases where *'because of the length of the construction period, it may not be possible or represent best value for customers to fix financing costs'*[12]. Therefore, risk would be allocated between the Customer and the CAP.

[11] Wastewater Digest. *The U.K. water industry leads the way to net zero*. April 2023 (accessed here)

[12] Ofwat. *DPC Guidance for Appointees delivering DPC projects*. March 2023, p.32. (accessed here)

Other reasons for a potential share of financing risks include:

- the fact that a significant time (e.g. one year) may pass between submitting a DPC bid and contracts being signed, so it would not be appropriate for the CAP to take market interest rate risk. Therefore, during this period the Customer effectively takes the risk. The Appointee may also insist (and/ or the bidder may suggest) that Funding Competition is run in the weeks running up to financial close;

- for more complex projects it may be difficult to obtain competitive operating period margins. After the 2008 Lehman Brother's collapse banks stopped offering long-term debt, normally only providing 7-year debt. Therefore, there may be a share of risks (both general interest rates and margins) between the CAP and the Customer.

Ofwat also suggest that **Refinancing Gains** should be shared between the CAP and the Customer. Refinancing Gain opportunities can arise in specific cases where long-term interest rates fall and/ or where the operating margins that were agreed at financial close would be much lower if new debt was sought, as the project may be performing very well so the financial market's perception of operating risk is much lower.

There are various ways a PPP can take a refinancing gain. For example, it could borrow a larger sum, keeping the annual total debt and interest repayments the same, and distribute the additional funds to shareholders. Alternatively, it could reborrow the same amount, and benefit from a reduction in the annual debt and interest repayments giving larger dividend payments over time.

Ofwat propose that in addition to the annual water bills that are authorised every five years through the Regulatory Allowance setting process, the Appointee will also be able to levy the CAP Charges on bills. This will be the mechanism through which the Appointee will pass on lower costs to the Customer.

Market Acceptance

All interviewees accepted Ofwat's principles.

Legal, Regulatory and Other Risks

Ofwat Default

Ofwat's position is any risks associated with the water sector should be borne by YWS with the DPC contractor taking responsibility for any non-specific changes to regulation and/or laws.

Market Acceptance

There was consensus that water industry specific changes in law that are reasonably foreseeable at the time of bidding although should lie with the Customer. The test is the reasonable bidder test, i.e. would others in the water sector agree the change was reasonably foreseeable at the time of bidding? If it was reasonably foreseeable the risk should have been priced by the bidders, and if a bidder did not it will need to manage the impacts.

There was some push back to general change in law risk, for example if corporation tax rates change in the future, but this is not a market norm so we would advise YWS does not accept general change in law risk.

Appendix 8: Market testing material shared with Supply Chain and Investors

The following material was made available to all the Contractors and Investors involved in the Market Engagement exercise as a high-level overview of the types of projects YWS may deliver as DPC.

Costs were based on initial estimates, and some were subsequently updated using further detail from YWS specialists. Where there is any variation between the costs in this appendix and the main body of the report, the costs in the main body of the report should be assumed to be the correct values.

The Project 2 package was a combination of the new [redacted] WTW plus a new abstraction from [redacted], with raw water transfer pipeline. The raw water abstraction and transfer element has been removed from this package.

DPC concept and structure

Introduction

Ofwat's Direct Procurement for Customers (DPC) scheme is a new contract structure for UK water companies to circumnavigate their traditional procurement routes (Frameworks, Alliances, competitive tenders, etc.) and procure a complete solution where an asset is Designed, Built, Financed, Operated and Maintained (DBFOM) by a private company for many years before being '*sold*' back to the water company with a Residual Value payment. They are effectively a type of Public Private Partnership (PPP), albeit with a private customer (the water company) not a public sector customer.

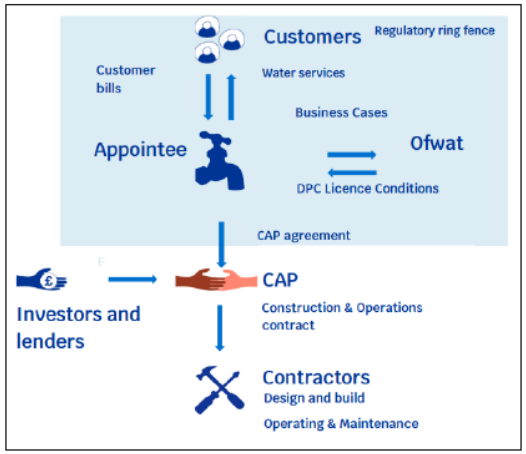
Instead of the water company paying contractors during construction, the Competitively Appointed Provider (CAP) as the DPC provider will make those payments and need to raise finance for this. The DPC will not get paid until the start of operations and will then be paid a daily availability-based payment. Demand risk will tend to be borne by the water company. The water company will allocate construction, operational and regulatory risks to the party who is best able to manage each risk.

Ofwat's aspiration is that because DPCs force providers to focus on minimising whole lifecycle cost, not building cheaper EPC (effectively Design & Build) facilities that need a lot of maintenance, they will offer Value for Money (VfM) for the water customer with cost and efficiency savings.

DPC contract structure

The figure below shows the DPC contract structure.

Figure: Ofwat DPC contract structure



Source: Ofwat. Draft Guidance for Appointees delivering DPC projects. September 2022. p.6. Accessed here: here

Parties to a DPC

Appointee: The water company that enters in the contract to carry out a DPC.

CAP: The DPC company that delivers the asset.

Contractors: The companies that build, operate and maintain the asset over the contract duration.

Investors and lenders: That finance the project over the asset life. Some of the investors may be the contractors.

DPCs in the market

There are already three DPCs under procurement:

- United Utilities' Haweswater Aqueduct Resilience Programme (HARP): a £1.7bn project to replace parts of the 110km Haweswater Aqueduct that brings drinking water to Cumbria, Lancashire and Greater Manchester (accessed here);
- Dŵr Cymru's (Welsh Water's) Cwm Taf Water Treatment Works: a new large water treatment works to serve c. 1.4 million people in Wales (accessed here);
- Southern Water's Hampshire Water Transfer and Water Recycling scheme: a new water transfer from the planned Havant Thicket Winter Storage Reservoir to ensure water supplies to Southern Water's Hampshire region (accessed here).

DPC Requirements

As part of its AMP8 (2025/26-2029/30) regulatory cycle Ofwat wants all water companies to issue at least one DPC project to the market. Therefore, there will be many coming to market.

Before considering VfM issues, DPC projects must first meet three tests which Ofwat explained in their DPC Technical Discreteness report (accessed here):

- Is Totex (Capex + Opex + Repex (Replacement Expenditure)) greater than £200m over the contract length?
- Construction Risk test: can most construction risks be effectively transferred to the CAP, or mitigated with contractual terms?
- Operations and Maintenance Risk Test: can maintenance and ideally operations of the asset be effectively transferred to the CAP?

Project 1: Stormwater overflow reduction

Introduction
Yorkshire Water is exploring opportunities for building a DPC programme from AMP8 and AMP9 Storm Overflow schemes.

Project driver
Under the Environment Act 2021, Water Industry National Environment Programme there is a need to reduce storm water discharges to inland and coastal water bodies. This is an area of focussed investment for AMP8 across the Water Industry to reduce pollution and improve water quality.

Project detail
The project for DPC would comprise a package of sewer network infrastructure activities to:
- Divert storm water discharges to new storage facilities
- Provide screening and/or return pumping facilities as required
- Operate the facilities in accordance with instruction from Client's sewer network
- Inspect, maintain and repair the assets

DPC Package
- The DPC package would comprise no more than 5 discrete project locations
- The discrete sites will be reasonably close to each other
- There are some very large schemes, and no site will have a Capex less than £40m

Technical challenges
The main challenges are:
- Multiple construction sites
- Interfaces with Client's sewer network assets at each location
- Division of responsibility for operation
- Sewer network modelling accuracy and climate change allowances

Timelines
- Tender launch = 2027/28
- Contract signing = 2029/30
- Construction period = 6 years
- Operations start = 2035/36
- Contract length = 25 years of operations
- Contract end = 2060/61

Commercial terms
- Payment mechanism based on daily availability payments & pass-through specific Outcome Delivery Incentives (ODI) penalties or deductions
- Residual value payment = c.40% Capex

Indicative annual costs (£m 2022/23 prices)

	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
								Contract period																														
Capex	385	31	58	69	81	104	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Opex	8	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0	0	0	0
Repex	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totex	394	31	58	69	81	104	42	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0	0	0	0

Project 2: Raw water supply, water treatment and treated water transfer

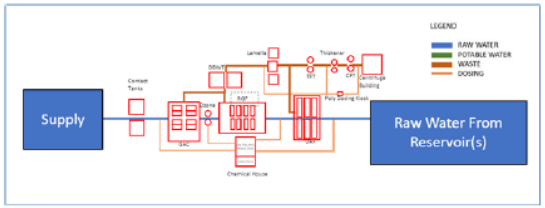
Introduction
Yorkshire Water is exploring a potential DPC solution for new Water Treatment Works (WTW) and associated raw and treated water transfer mains.

Project driver
Water supply resilience is a critical element of Yorkshire Water's business, to achieve this can require large scale treatment and transfer of water between locations to serve population centres.

Project detail
The project scope comprises:

1. Pipe from river to new WTW
   - A new river raw water abstraction point using an existing licence
   - Screening and pumping facilities
   - Raw water transfer main ~20km
2. Greenfield site WTW with capacity to treat 50 million litres per day (MLD)
3. New 90-100km water transfer main with 50MLD capacity, along with up to 8 transfer / booster pumping stations and break pressure chambers

Notional WTW Design



Technical challenges
The main challenges are:
- Land acquisition
- Raw and treated water pipeline construction
- Seasonal water quality variations
- Operational requirements to interact with other grid assets

Timelines
- Tender launch = 2026/27
- Contract signing = 2028/29
- Construction period = 5 years
- Operations start = 2033/34
- Contract length = 25 years of operations
- Contract end = 2058/59

Commercial terms
- Payment mechanism based on daily availability payments & pass-through specific Outcome Delivery Incentives (ODI) penalties or deductions
- Residual value payment = c.40% Capex

Indicative annual costs (£m 2022/23 prices)

	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
							Contract period																															
Capex	163	29	34	34	31	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Opex	175	0	0	0	0	0	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	0	0	0	0	0
Repex	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0
Totex	378	29	34	34	31	35	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	47	7	7	7	7	0	0	0	0	0

Project 3: Raw water supply, water treatment and treated water storage

Introduction
Yorkshire Water is exploring a potential DPC based upon a new raw water abstraction, new water treatment works (WTW) and treated water storage at two locations.

Project driver
Water supply resilience is a critical element of Yorkshire Water's business, to achieve this can require redundancy in raw water supplies and treatment facilities to cope with maintenance and unplanned outages elsewhere in the network and water shortages.

Project detail
The project scope comprises:

1. Pipeline from river to new WTW
   - A new river raw water abstraction point where a new licence is required
   - Screening and pumping facilities
   - Raw water transfer main ~5km
2. Greenfield site WTW with capacity to treat 75MLD
3. Two new treated water storage tanks – one being 60 million litres (Ml) and the other 90 Ml.

Technical challenges
The main challenges are:

- Raw water pipeline construction
- Seasonal and source related water quality variations (upland reservoir and river sources)
- Shared treated water after WTW
- Operational requirements to interact with other grid assets

Timelines
- Tender launch = 2026/27
- Contract signing = 2028/29
- Construction period = 5 years
- Operations start = 2033/34
- Contract length = 25 years of operations
- Contract end = 2058/59

Commercial terms
- Payment mechanism based on daily availability payments & pass-through specific Outcome Delivery Incentives (ODI) penalties or deductions
- Residual value payment = c.40% Capex

Indicative annual costs (£m 2022/23 prices)

	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
							Contract period																															
Capex	203	27	36	39	38	33	20	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Opex	125	0	0	0	0	0	2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	0	0	0	0
Repex	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	17	0	15	1	0	0	0	0	0	0
Totex	362	27	36	39	38	33	22	15	5	5	5	5	5	5	5	5	5	5	6	5	5	5	5	5	5	5	22	5	20	6	5	3	0	0	0	0

Project 4: New transfer sewer and wastewater treatment

Introduction
Yorkshire Water is exploring a potential DPC for a new wastewater treatment works (WWTW) to combine two existing plants and a new transfer sewer.

Project driver
Under the Environment Act 2021, Water Industry National Environment Programme there is a need to increase treatment capacity, reduce storm water discharges and provide higher standards of treatment. This is an area of focussed investment for AMP8 across the Water Industry to reduce pollution and improve water quality.

Project detail
The project scope comprises:

1. Storm overflow storage at an existing WWTW
2. 300 litres/second (l/s) pumped and gravity transfer from the first WWTW to a secondary site 5km away.
3. Construction of a new ~400l/s greenfield WWTW incorporating the Nereda™ process for phosphorous removal.

Technical challenges
The main challenges is the transfer sewer construction (may include micro tunnelling)

Timelines
- Tender launch = 2025/26
- Contract signing = 2027/28
- Construction period = 5 years
- Operations start = 2032/33
- Contract length = 25 years of operations
- Contract end = 2057/58

Commercial terms
- Payment mechanism based on daily availability payments & pass-through specific Outcome Delivery Incentives (ODI) penalties or deductions
- Residual value payment = c.40% Capex

Indicative annual costs (£m 2022/23 prices)

	Total	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
							←																								→					
							Contract period																													
Capex	72	6	17	21	19	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Opex	6	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	0	0	0	0
Repex	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	11	0	0	0	7	0	0	0	0	0
Totex	85	6	17	21	19	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	11	0	0	0	7	0	0	0	0	0

DPC Potential Risk Allocation *

	Development			Construction and asset delivery									Operational								Financial			Legal	
	Planning	Land	Other consents	On time delivery	Cost overruns	Site conditions	Works information	Detailed design	Third parties	Changes in scope	Interfaces with YWS' s existing assets	Commissioning	Cost (Opex and maintenance)	Operational performance	Compliance with laws and regulations	Defects during operations	Demand risk	Over-utilisation	Change in scope	Value testing	Condition of asset/ hand back risk	Financing costs	Refinancing gains	Customer bad debt	Specific laws relating just to DPC projects or water sector	General change of law
Ofwat default	YWS / 👤	YWS / 👤	YWS / 👤	YWS / CAP	YWS / 👤 / CAP	CAP	YWS	CAP	YWS / CAP	YWS / 👤	YWS	CAP	CAP	CAP	YWS / CAP	YWS / CAP	YWS / 👤	YWS / 👤	YWS / 👤	👤 / CAP	CAP	👤 / CAP	👤 / CAP	👤 / CAP	👤	CAP

Key: 👤 Customer; YWS Yorkshire Water; CAP CAP contractor

* More information is found in Section 4.3 of Ofwat's March 2023 *Guidance for Appointees delivering DPC projects* (accessed here)

Supply Chain Questions

Your company

1. What is your company's specialism? Where in the UK do you operate? What types of contracts (£m size) and contract structures (Framework, Competitive Tender, Alliancing, PFI-type) do you normally operate under?

General questions about DPCs

2. What is it about DPC contracts you find attractive?
3. For the identified projects, the expectation is DPC contractors will tender fixed price contracts. Would you have any concerns with this approach?
4. Are there any general market conditions that may impact your decision to tender for works?

Payments at the end of the contract (if relevant)

5. Ofwat requires a residual payment at the end of the contract with a defined asset hand back standard. On the four projects this could be in excess of 40%.
   - What are your thoughts on this?
   - How will it impact on tender pricing?
   - What asset condition protection should be put in place to help reduce contract uncertainty?

Features that will make DPCs attractive

6. There may be 20+ DPC contracts released to the market in the next Price Review. Which of the following are the more important features in deciding whether a specific DPC contract is attractive:
   - Project types (e.g. pipes, reservoirs, Water Treatment Works, Waste Water Treatment Works, storm overflows)
   - Output specification v. design specifications
   - Contract length (for all we are proposing 25 years from commissioning)
   - Capex size (£m)
   - Opex amount (£m p.a.)
   - Build duration
   - Payment mechanism
   - Greenfield v. build in existing Yorkshire Water facilities
   - Performance guarantees/ performance bond requirements
   - Single site investments v. multiple site investments
   - Particular locations
   - Counterparty risk (i.e. the balance sheet of water company)
   - Other features

Ofwat's DPC Risk Allocation matrix

7. Looking at Ofwat's Risk Allocations guidance (previous slide) are there any allocations you would object to? What would you propose? Are there others where you believe the CAP should take the risk instead of others?

The projects

8. Which, if any, of the four projects would be of interest to you?
9. DPC schemes need to represent Value for Money (VfM) for customers compared to standard competitively procured EPC contracts. Do you think these projects will be able to demonstrate VfM?

Investment into project (if relevant)

10. If you will invest equity in the projects (and can share with us) what equity returns would you normally expect and would these projects meet your expectations?

Investor Questions

Your company

1. What is your company's specialism and do you invest equity and debt? What sizes of projects do you normally finance? Do you have any specific investment requirements for projects?

General questions about DPCs

2. What is it about DPC contracts you find attractive?
3. For the identified projects, the expectation is DPC contractors will tender fixed price contracts. Would you or the contractors you partner with have any concerns with this approach?
4. Are there any general market conditions that may impact your decision to tender for works?

Payments at the end of the contract (if relevant)

5. Ofwat requires a residual payment at the end of the contract with a defined asset hand back standard. On the four projects this could be in excess of 40%. The residual payment will be based on the asset's depreciated historical cost. There is a lack of clarity on Ofwat expectations, but two options could be:
   i. A defined residual value payment for meeting asset hand back standards, with deductions if standards are not met
   ii. A defined guaranteed residual value payment, and then separate asset hand back requirements

   - What are your thoughts on residual value payments?
   - How will it impact on tender pricing?
   - Do you have a view on the two options?
   - What asset condition protection should be put in place to help reduce contract uncertainty?

Features that will make DPCs attractive

6. There may be 20+ DPC contracts released to the market in the next Price Review. Which of the following are the more important features in deciding whether a specific DPC contract is attractive:
   - Project types (e.g. pipes, reservoirs, Water Treatment Works, Waste Water Treatment Works, storm overflows)
   - Output specification v. design specifications
   - Contract length (for all we are proposing 25 years from commissioning)
   - Capex size (£m)
   - Opex amount (£m p.a.)
   - Equity amount (£m)
   - Build duration
   - Payment mechanism
   - Greenfield v. build in existing Yorkshire Water facilities
   - Performance guarantees/ performance bonds requirements
   - Single site investments v. multiple site investments
   - Particular locations
   - Counterparty risk (i.e. balance sheet of water company)
   - Other features

Ofwat's DPC Risk Allocation matrix

7. Looking at Ofwat's Risk Allocations guidance (previous slide) are there any allocations you would object to? What would you propose? Are there others where you believe the CAP should take the risk instead of others?

The projects

7. Which, if any, of the four would be of interest to you?
8. DPC schemes need to represent Value for Money (VfM) for customers compared to standard competitively procured EPC contracts. Do you think these projects will be able to demonstrate VfM?

Possible investment structure

10. How may you structure your bid:
    - What debt/ equity split would you anticipate, or would you finance on-balance sheet?
    - If you can share with us, what equity returns would you normally expect and would these projects meet your expectations?
    - If you do not provide yourself, how would you approach the market for senior debt, and what bond/ private placement/ bank debt syndication strategy would be followed? What debt margins would you envisage or what bond spread above AA rated UK Government gilts would you envisage?
    - What features (see lists above) will make a DPC contract more / less attractive for banks/ bond investors?

2. River water quality monitoring analysis (Baringa)

Initial DPC Assessment – River Water Quality Management (RWQM)

1. Summary

Smart suitability for DPC:	
Based on Construction, Ops and Maintenance Risk	All scope potentially suitable for DPC, apart from YW IT data storage and analytics. There remains one key risk areas: • Land Purchase/Lease & Access Rights
Based on Scalability	Suitable for DPC (DPC relevant scope: £280m > £200m threshold).
Overall DPC Suitability	Suitable for DPC (dependent on mitigation of Land Purchase/Lease Risk).

Potential to offer positive VfM
Good potential to offer positive VFM

2. Introduction

2.1 Programme Outcome and Benefits

The River Water Quality Management (RWQM) programme is an activity mandated by regulators to automate the measurement of river water quality at points near to YW owned discharge points into rivers. Frequent measurements must be automatically shared with public monitoring sites, as well as with YW.

To meet the regulatory requirements, YW has estimated that 4509 sensors are required, 40% of these are required in AMP 8, with the remainder in AMP 9. Indicative roll-out profile below.

AMP8					AMP 9	Total
25/26	26/27	27/28	28/29	29/30		
53	100	550	550	550	2706	4509

Programme delivery scope includes:

- Sourcing/producing measurement assets
- Survey of best sensor locations, and agreement with local Environment Agency (EA)
- Acquiring or leasing agreed locations
- Installation and maintenance of assets
- Provision and maintenance of comms network to obtain data at frequent intervals
- Interfacing with public platform and YW IT estate to provide data within the hour.

2.2 Scope of Assessment

This paper provides an initial assessment of DPC as a funding option for RWQM. The paper is divided as follows:

- Ofwat Technical Discreteness Outcomes Assessment (Qualitative):
    - Scalability Test
    - Construction Risk Test
    - Operations and Maintenance Risk Test
- Qualitative HM Treasury Value for Money test
    - Visibility
    - Durability
    - Achievability
- Value for Money statement

3. Ofwat Technical Discreteness Tests:

3.1 Scalability Test

Test: What is the scope of programme that could be met by DPC. If Totex for suitable scope is over £200m, the programme should evaluate DPC as an option for financing and delivery. If Totex is less than £200m, is there an option for additional scope/bundling of programmes?

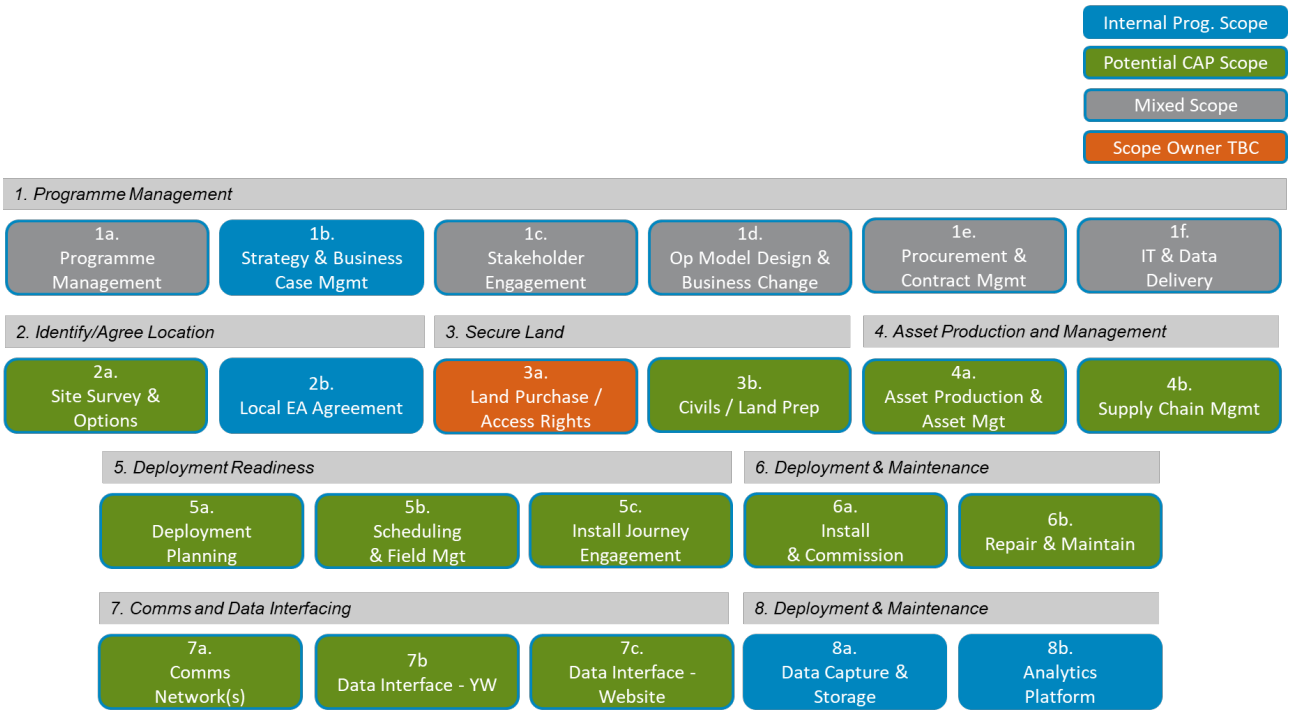
The diagram below provides a view of the RWQM programme capabilities that may be suitable for DPC.

Based on the Construction Risk Test and the Ops and Maintenance Risk Tests (next two sections), our view is that he key elements of the programme are candidates for DPC. The only areas that aren't candidates for DPC are:

- Data capture, storage, and analytics within the YW IT estate,
- Strategy and benefit management.
- Engagement with the Local EAs (Environment Agencies) to agree locations of sensors and the measurement process/strategy.

There is one key risk area. For Land Purchase/Access Rights the approach needs to be determined. Evaluation is required within YW as to whether YW would be responsible for land purchase/lease, or whether this could sit with a CAP. Vendor engagement is required to understand whether a CAP would be willing to take on this responsibility (including any risks around land procurement timelines, costs, and legal complexities). There may also be an option to explore a mixed approach for this capability area, for example YW completing the procurement and legal work, and a CAP funding the purchase/lease.

More detail on scope is provided in the Construction Risk Test and Operations and Maintenance Risk Test sections.



The table below contains the volume of assets and installs required, and indicative cost per asset over the next 2 AMPs. **Total value of the programme is expected to be £485m which is over the £200m DPC threshold, meaning that this project should be considered as a candidate for DPC.**

	AMP 8	AMP 9	Total
Volume	1803	2706	4509
Indicative Cost Per Asset	£100k		
SUBTOTAL	£189m	£284m	£473m
Opex (YW Data Analytics)	£1m	£1m	£2m
YW Project Development Costs (2%)	£9.5m		£9.5m
TOTAL	**£200m**	**£285m**	**£485m**

YW will need to provide for development costs, which have been included in the above table. YW intend to request for funding at the 2% of project cost level (OFWAT suggest a range of 1-2%). The reason for the upper end of the range is due to the lack of in-house knowledge, meaning expertise will need to be bought in, and the nascent nature of this investment and contracting route.

Scope risks around land purchase/lease need to be resolved to remove risks around scalability. For example, removing full costs of land purchase/lease from DPC scope (management, legal and purchase/lease costs) could result in a notable decrease in DPC relevant costs, potentially below the £200m threshold. As previously mentioned, there may be an option of sharing responsibility for land purchase/lease meaning that the bulk of the cost (i.e., the purchase/lease cost) could be funded upfront by the CAP.

3.2 Construction Risk Test

Test: Is the programme sufficiently separable so there are no significant construction interface issues that cannot be cost-effectively managed or mitigated? Are there construction risks that cannot be transferred so need to be retained? Are there restrictions on the transfer of regulatory obligations and if so, is there a restriction on the transfer of functions? Are there significant customer/stakeholder interface challenges that cannot be transferred?

The only programme areas not suitable for DPC are:

- The provision of YW data storage and analytics capability, which will remain the responsibility of YW.
- Strategy and benefit management, which is best placed with YW.
- Engagement with Local EAs, where it was agreed that YW is best placed to continue this relationship.

The key risk area is Land Purchase / Lease. Resolution of the Land Purchase / Lease issues will require a more involved process of:

- Review by YW legal and property/land teams to define and agree an approach within YW and aligned regulatory policies, mitigating any associated legal risks.
- Engagement with potential vendors to understand appetite to take Land Purchase / Lease activities and/or costs within their scope, whether they could manage risks, and how they may comply with YW guidelines and rules in this area.

Area	Components	RAG	Justification
Location / Land	Site Survey / Options	G	• YW would be comfortable with the CAP completing this work on YW behalf. It has little or no interaction with existing YW processes or assets.
	Local EA Engagement	R	• YW's view is that it is best placed to maintain the relationships with Local EAs (as part of existing processes). Therefore, this area is not suitable for DPC.
	Land Purchase / Lease	A	• This is the biggest risk area. This requires: • Review by YW legal and property/land teams to define and agree an approach within YW and regulatory policies, mitigating any associated legal risks.

			• Engagement with potential vendors to understand appetite to take Land Purchase / Lease activities and/or costs within their scope, whether they could manage risks, and how they may comply with YW guidelines and rules in this area. • There may be an option to share responsibility for this area, for example YW completing the procurement and legal work, and a CAP funding the purchase/lease.
	Civils/Land Prep	G	• Assumed that the CAP will be able to complete any civils and land prep as part of the install process.
Asset	Production/procurement of water testing equipment via CAP	G	• During initial proof of concept testing, the tested assets were built by the vendor. YW has little experience in producing such assets and there is no intention for YW to do so. • Therefore, asset production would likely be the responsibility of the CAP in a DPC arrangement.
	Supply Chain Mgt	G	• As the CAP will produce and fit the asset, it follows that the CAP should also be responsible for supply chain management.
Install	Planning, scheduling and completing install	G	• This can logically be included in CAP scope. Vendors have indicated a willingness to produce/procure assets and install them.
	Interaction with rest of network and existing asset	G	• Limited or no interaction with existing assets. The only interaction would be with the YW data management solution through providing regular data feeds.
Comms	Set-up and run comms network	G	• Water and Energy utilities have limited experience of delivery in this area, and there is little or no customer engagement involved, so outsourcing responsibility to a CAP would be appropriate.

Programme Mgt	Programme Mgt, Stakeholder Engagement, Op Model Design & Business Change, Procurement & Contract Mgmt.	A	• It is expected that the CAP will take on overall programme and vendor management of asset sourcing, delivery and installation, and obtaining and sharing data feeds. • Responsibility for Stakeholder Engagement, Op Model Design & Business Change and Procurement and Contract Mgt, will likely be shared.
Strategy & Business Case Mgmt	Strategy & Business Case Mgmt	R	• Strategy and business case management will remain the responsibility of YW.
IT and Data	Interfacing with public platform and YW estate	G	• As the CAP will run the comms network, it makes sense for the CAP to also provide the data (as a service) to all those that require it, including sending the data to the YW IT estate.
	YW data governance and analytics capabilities.	R	• YW will retain responsibility for storing data in its own systems, and producing reports based on the data. This is likely to be a relatively small cost.

3.3 Operations and Maintenance Risk Test

Test: Are there restrictions on the transfer of regulatory obligations and if so, is there a restriction on the transfer of functions? Are there significant customer/stakeholder interface challenges that cannot be transferred? Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?

The only maintenance and ops area not suitable for DPC is the maintenance of YW data storage and analytics capability, which will remain the responsibility of YW.

All other maintenance and ops areas could be suitable for DPC.

Area	Components	RAG	Justification
Land	Land maintenance	G	• It is expected that any maintenance of land rented or owned as part of the programme, or maintenance of land access (where applicable), will be completed by the CAP.
Asset	Water testing equipment via CAP	G	• It is expected that, as the CAP produced/sourced and installed the asset, the CAP will be responsible for any maintenance to the asset.
Install	Asset replacement	G	• It is expected that, as the CAP produced/sourced and installed the asset, the CAP will be responsible for any replacement of the asset due to faults.
Comms	Set-up and run comms network	G	• The CAP will be responsible for maintaining the comms network and ensuring that connectivity KPIs are met.
IT and Data	Interfacing with external website and YW estate	G	• The CAP will be responsible for maintaining the data interfaces and ensuring that data provision KPIs are met.

	YW data governance and analytics capabilities.	R	• YW will retain responsibility for maintaining its own IT systems.

4. Qualitative HM Treasury Value for Money Test

Area	Test	RAG	Justification
Validity	Will there be sufficient scope definition by draft Ofwat submission	A	• Sufficient scope definition is likely for most components. • The only scope item at risk (which could account for a reasonable proportion of cost depending on outcome) is land purchase. Actions underway to define a mitigating solution to this risk.
	Prior to DPC submission, can a clear scope, measurable output specification, and payment mechanism be defined	A	• The biggest risk factor is resolving questions around Land Purchase / Lease within YW, and with vendors. If this can be resolved quickly then scope can be confirmed prior to DPC submission.
	Will the project/programme transfer operation of existing assets.	G	• No. This programme will only cover new water quality measurement assets.
	Are there known potential areas of material change during the DPC period that can't be managed affordably through a contract.	A	• The biggest risk factor is the cost of land, and time taken to purchase the land. There are avenues to mitigate some of this risk (e.g. compulsory land purchase). • Full assessment of this risk is required from YW land/property and legal teams. • Potential vendors to be engaged on willingness to manage land purchase activities, and associated risks, and confirm how this may be contracted.

	Are there high levels of future technology risk or uncertainty	A	• Devices used to measure water quality are generally a new concept in the UK and may need to be built for this need. Therefore, there will be some associated risk with this new technology. • Trials are underway to test accuracy and reliability of assets.
Desirability	Can DPC manage whole life risks better than traditional method?	G	• YW currently does not have the capability to deliver this end-to-end process, therefore a DPC method using experts as vendors and delivery managers would seem to address some of the risks.
	Is there scope for innovation in design/service (operations) provision to unlock value?	G	• Yes, there is scope to innovate through creation and placement of devices, and strategy for communicating with devices, as this is a completely new capability that will likely use new technology.
	Will the project enable multi-AMP investment (spreading cost)?	G	• Yes. DPC will enable roll-out across both AMP 8 and AMP 9, with cost recovery spread across the asset lifecycle (potentially 10 years).
Achievability	Is there sufficient market interest and capacity for construction and delivery? AND Is the project/programme sufficiently attractive to investors?	A	• Vendors have been engaged and have shown interest in the asset production, install, maintenance, and providing data as a service. • The key risk area is land purchase/lease arrangements and costs. Engagement with vendors underway to understand willingness to include this area in scope.
	How challenging will it be for YW to procure and manage the project/programme?	A	• Based on initial vendor engagement, there shouldn't be too many challenges in contracting for asset production, install, maintenance, and providing data as a service. • However, as per above response, the key risk will be land purchase/lease arrangements and costs.
	Timing of outcome: Are the performance outputs required earlier than a DPC route could practically deliver (assume 2 years)?	G	• This is a mandated roll-out. There is a need to roll-out 40% of assets at high value locations in AMP8, and the reminder in AMP9.

			• The roll-out profile will start lower in years 1 and 2, meaning any delay in programme start due to DPC procurement should be able to be mitigated.

Early Value for Money Statement:

We believe that using DPC as a mechanism to deliver the RWQM programme would deliver good value for money. VfM view provided below:

- **Innovation** – This is a new capability area, with new technology, processes and skillsets required. There is therefore lots of scope for innovation in asset design/build, how/where measurements are taken, and how data is communicated within the hour at potentially high volumes. As YW has limited experience or capability in this area, it makes sense that the challenge could be packaged up and delivered by SMEs in this area, who can naturally bring with them greater innovation in addressing the challenge.

- **Efficiency & Op Model** – This will depend on the contracting scope, approach, and CAPs. There is an opportunity for CAPs to design and deploy solutions across multiple water companies, increasing efficiency and value to customers. On the other hand, competition between CAPs in this area could drive innovation and efficiency. CAPs have an opportunity to become more efficient than Water Companies themselves in delivering these capabilities.

- **Lower Cost of Capital** – Given YW has a good credit rating, it is unlikely that a CAP would offer a better Cost of Capital for this size of programme. Some CAPs (particularly small companies) could offer a worse Cost of Capital than YW could secure itself.

- **Quicker Delivery / Outcomes** – DPC would allow for funding to facilitate roll-out across both AMP 8 and AMP 9. This will help YW to meet the mandated target of 40% deployment by the end of AMP 8, with the remainder in AMP 9.

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3. Smart metering analysis (Baringa)

Initial DPC Assessment – Smart Metering Programme

1. Summary

Smart suitability for DPC:	
Based on Constriction, Ops and Maintenance Risk	Some Smart scope is suitable for DPC: • Asset • Installs • Comms • Maintenance
Based on Scalability	Suitable for DPC (DPC relevant scope: £300m > £200m threshold). However, cost may change during modelling and programme scope definition, so this should be revisited.
Based on VfM	Based on current information, it is unlikely that DPC will offer notable Value for Money benefits over and above direct financing options (and CAC). DPC may also lead to higher bill costs over the asset lifecycle. (However, if YW have concerns around ability to finance the programme, off balance sheet may have a potential to reduce this risk, and DPC may offer an opportunity to remove this constraint).
Based on Customer Affordability	Overall impact of DPC on bill value across asset lifecycle could be larger due to full repayment in the 15 years.
Overall DPC Suitability	TBC – depends on business ability to finance the Smart programme given other AMP 8 priority commitments.

Potential to offer positive VfM
Limited potential to offer positive VfM over and above that offered by a CAC and RCV funding option. (due reduced benefits in DPC option and potentially higher bill impacts)

2. Introduction

2.1 Programme Outcome and Benefits

The YW Smart metering programme intends to install c.1.6m Smart (AMI) meters in AMP8. The number is made up of:

- C. 1.4m meter replacements of AMR meters that are due to reach end of life in AMP8. If these are not replaced, they will need to be visually read twice a year until a new meter is fitted (to meet Retail commitments).
- 125k optant installs (customer request). AMR meters may need to be installed instead of AMI meters if the Smart programme did not go ahead.
- 75k New Connection installs. Whilst the new connection install/asset cost is met by the developer, AMR meters may need to be installed instead if the Smart programme did not go ahead.

Smart will be an enabler for c.£113m of benefits across AMP8 (note: number being refined/validated and will be subject to change). Key benefit drivers will be:

- Customer Side Leakage (CSL) reduction, impacting leakage ODIs, marginal cost of water, and alternative supply costs (WRMP balancing).
- Per Capita Consumption (PCC) reduction impacting PCC ODIs, marginal cost of water, and alternative supply costs (WRMP balancing).
- Non household demand reduction impacting PCC ODIs, marginal cost of water, and alternative supply costs (WRMP balancing).
- AMR read cost reduction.

Smart facilitation of WRMP not only delivers some of the biggest benefit, but it also can be associated with an alternative cost if Smart is delayed. The WRMP team may need to find and fund another method of balancing the water network (supply or demand) to offset any shortfall in leakage and usage reduction from Smart.

2.2 Base vs Enhance Funding

Funding for the Smart programme is split into Base cost and Enhance costs. This is important consideration when choosing the funding option as it determines how much YW may need to self-fund and influences the amount of funding through DPC. The general assumptions around Base-Enhance split are:

- Base costs:
    - Cost of meter asset
    - Cost of meter installation
    - Internal fixed costs
- Enhance costs:
    - Smart meter comms network
    - Smart Ops Centre
    - MDMS
    - Benefit realisation – CSL and PCC
    - Digital capability and customer journeys
    - Technical meter support/investigations

2.3 Scope of Assessment

This paper provides an initial assessment of DPC as a funding option for Smart. The paper is divided as follows:

- Ofwat Technical Discreteness Outcomes Assessment (Qualitative):
  - Scalability Test
  - Construction Risk Test
  - Operations and Maintenance Risk Test
- Qualitative HM Treasury Value for Money test
  - Visibility
  - Durability
  - Achievability
- Value for Money analysis
  - Based on the Smart business case, an initial view of how cost and benefit analysis informing a high-level Value for Money view.
  - This is an early view of VfM and will need to be evolved further dependent on a decision around DPC.
  - The business case data is still in development and will be subject to change, which could influence recommendations.

3. Ofwat Technical Discreteness Tests:

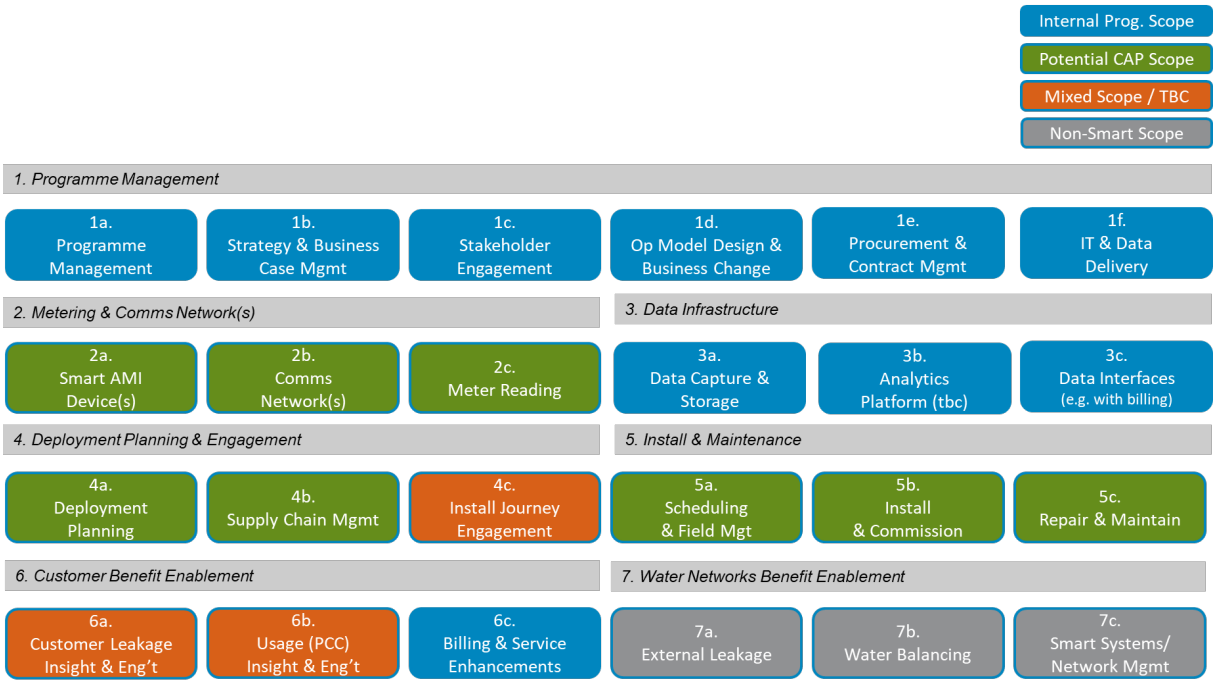
3.1 Scalability Test

Test: What is the scope of programme that could be met by DPC. If Totex for suitable scope is over £200m, the programme should evaluate DPC as an option for financing and delivery. If Totex is less than £200m, is there an option for additional scope/bundling of programmes?

The diagram below provides a view of the required Smart capabilities that are likely suitable for DPC.

Our conclusion, based on the Construction Risk Test and the Ops and Maintenance Risk Tests (detailed in the next two sections), is that the assets, installs, comms network and maintenance areas are potentially suitable for DPC. These areas also account for c.70% of the programme cost.

Based on the risk tests, the areas of programme management, strategy and business case, overall solution/journey design and business change activities, and IT and analytics delivery, are not suitable for DPC and should be delivered via direct or alternative funding and/or delivery channels.



This paper therefore focuses on costs associated with the elements deemed appropriate for DPC, namely the cost of assets, installs, comms, and maintenance. Indicative cost profiles are shown in the table below (these are subject to change as the business case is developed).

Asset, Install, Comms & Maintenance Costs (£m)			
Cost Area	Asset/Install Cost	Comms Cost	Total
Meter Replacement	161	6	167
Optants	16	1	17
New Connections	11	0.5	11.5
		AMP 8 Maintenance cost	1.2
		10% Contingency	20
		Indicative Return on RCV (WACC 3.29%)	83
		INDICATIVE DPC CONTRACTING AMOUNT	**300**
		Indicative AMP8 Base Funding	-25
		AMP7 Base Funding (not fully used for installs)	-25
		INDICATIVE FUNDING THROUGH DPC	**250**

<u>The indicative contracting amount is currently above the £200m threshold, therefore the Smart programme currently meets the scalability criteria.</u>

Indicative funding through DPC could be £250m. This is lower than the contracting amount as:

- Circa 70% of the cost is 'base cost', as 1.4m of the 1.6m Smart installs will be for end-of-life AMR to AMI replacements.
- We need to deduct the AMP 8 base allocation for meter replacement so that this value isn't double counted for funding. For illustration purposes we've assumed this will be the same as the AMP 7 allocation (c.£25m), but this amount will be subject to change.
- A proportion of the AMP 7 base allocation for meter exchanges was reallocated to fund other high priority projects within YW. Therefore, as some of this amount wasn't used for meter installs, we have deduced this from the DPC funding amount. We've used the full £25m for illustration purposes, but this amount may change based on volume of replacements completed in AMP 7.

There may be an option to add an additional c.£20m of scope to the programme by adding Change of Occupancy install profile, delivering c.80k of additional installs. However, this does come with some risk:

- This additional scope adds complexity around scheduling and financing, as volumes and profile of Change of Occupancy can only be estimated.
- Change of Occupancy locations tend to be spread unevenly across regions, so cost per install could be higher.
- A new Change of Occupancy journey will need to be rolled-out. There are risks this could negatively impact the CoO journey experience, or add complexities to billing due to the switch, so extensive design and planning would be required to understand if this is suitable.

- The increased volume of installs could lead to a potentially greater impact from supply chain and install capacity constraints, which will be driven by the large volume of companies running intensive Smart rollouts in parallel.

3.2 Construction Risk Test

Test: Is the programme sufficiently separable so there are no significant construction interface issues that cannot be cost-effectively managed or mitigated? Are there construction risks that cannot be transferred so need to be retained? Are there restrictions on the transfer of regulatory obligations and if so, is there a restriction on the transfer of functions? Are there significant customer/stakeholder interface challenges that cannot be transferred?

The asset, install and comms components of the Smart programmes have a medium to low risk for DPC delivery, meaning they are good candidates. These components require minimal interaction with YW existing assets, can be bundled discretely, are areas where potential vendors have a lot of experience in independently managing delivery (particularly from the Smart Energy roll-out), and the comms component is an area where YW itself has little expertise or experience.

The areas of leakage remediation, IT and Data, Programme Mgt and Customer Ops, and Benefit Realisation, have higher risks for inclusion in DPC as these require notable updates to existing YW assets or operational processes, require notable customer interaction, and require coordination and management across DPC and non-DPC scope. Therefore, our recommendation is that these components are not considered for DPC.

Area	Components	RAG	Justification
Meter	Procurement of meter assets via CAP	G	• Common for install, comms or full rental partners to procure assets. Flexibility to adapt to YW preferences.
Install	Planning, scheduling and completing install	G	• This can logically be outsourced. Most installers offer this capability and a lot of experience in this area (from Energy and Water).
	Install journey customer engagement (incl booking)	A	• Partners offer booking portals and tools, comms capabilities and call centres. • YW may wish to maintain influence over overall journey, may receive calls from customers in the journey, and may need to be more involved with NHH customers due to wider number of retailers and larger implications of outages.

	Interaction with rest of network and existing asset (e.g. civils work and boundary boxes)	G	• Work that's limited to point of meter installation, including civils work, is already conducted by third party vendors so no issues with DPC.
	Leakage and wider network remediation work	R	• Any remediation or enhancement work to wider assets (e.g. fixing a customer side leak) identified during an install will remain the responsibility of YW, as YW owns the wider assets and customer relationship (as well as downstream consequences, e.g. billing).
	'On demand' installs, such as Optant installs and New Connections	A	• TBC if this is suitable for a DPC relationship given uncertainty of work vols, profiling, location and type. This could potentially be met through a variable cost component of a DPC contract.
Comms	Set-up and run comms network	G	• Water and Energy utilities have limited experience of delivery in this area, and there is little/no customer engagement involved, so outsourcing responsibility to a CAP would be appropriate.
Programme Mgt	Programme Mgt, Overall Solution Design, Overall Quality Assurance, Strategy & Business Case Mgmt, Stakeholder Engagement, Op Model Design & Business Change, Procurement & Contract Mgmt.	R	• These capabilities will cut across all components of the programme, including CAP delivery and non-CAP delivery (and across multiple partners/vendors), and includes overall cost and benefit realisation. It therefore will need to be delivered by YW and not a CAP.

IT and Data	Upgrade of key billing and service systems to realise benefits from Smart data.	R	• IT and Data will require changes to, and interfacing with, exiting YW assets so should remain overall responsibility of YW.
	Data governance and analytics capabilities.	R	• YW wishes to retain control of all customer consumption data going forward, particularly as YW is responsible for benefit realisation using the Smart data received. YW may choose to outsource components of data analysis, but this will still sit within a wider YW data management and data security framework.
Customer Ops and Benefit Realisation Resource	Extra contact centre capacity during roll-out due to increased demand	R	• Any general billing or service queries that customers have will remain the responsibility of YW, so the responsibility for meeting any increased demand in this area will remain with YW.
	Teams to drive benefit realisation (particularly for leakage and PCC)	R	• Benefit realisation capabilities are key to the success of the Smart programme in delivering customer value. YW will retain overall responsibility for benefit realisation and associated customer engagement.
Meter Reading	For non AMI meters, or AMI meters not connected properly.	A	• TBC who will have responsibility for any ad-hoc reading due to AMI meter faults. Likely this could be the responsibility of a CAP.

3.3 Operations and Maintenance Risk Test

Test: Are there restrictions on the transfer of regulatory obligations and if so, is there a restriction on the transfer of functions? Are there significant customer/stakeholder interface challenges that cannot be transferred? Are there significant operational interface issues that cannot be cost-effectively managed or mitigated?

The areas of asset, install and comms maintenance are medium to low risk for DPC. These require minimal interaction with YW existing assets, can be bundled discretely, are areas where potential vendors have a lot of experience in managing independently (particularly from the Smart Energy roll-out), and the comms component is an area where YW itself has little expertise or experience.

The areas of leakage remediation, IT and Data, Customer Ops and Benefit Realisation are higher risk areas for DPC as these require notable updates to existing YW assets or operational processes, and/or require notable customer interaction. Our recommendation is that these components are not considered for DPC.

Area	Components	RAG	Justification
Meter /Assets	E2E meter asset maintenance	G	• Can be managed by a CAP, many of which have a lot of experience of E2E Smart asset maintenance from Energy and Water.
	Meter warranty	G	• Can be managed a CAP, many of which have experience of asset management, vendor engagement and warranty management.
	Leakage and wider network remediation work	R	• Any remediation or enhancement work to wider assets (e.g. fixing a customer side leak) will remain the responsibility of YW, as YW owns the wider assets and customer relationship (as well as downstream consequences, e.g. billing).

Comms Network	Maintenance of comms network	G	• Maintenance of the comms network could be fully completed by a CAP as does not involve customer engagement or interaction with YW assets. CAPs will also have much more maintenance experience of in this area.
IT and Data	Key billing and service systems to realise benefits from Smart data.	R	• IT assets will be owned by YW, and overall maintenance will therefore remain the responsibility of YW. Maintenance of some systems could be outsourced (e.g. a SaaS solution), but the vendors for software maintenance will likely be different to those providing meter asset and comms maintenance services.
	Data governance and analytics capabilities.	R	• Overall data governance and analytics will be owned by YW, and overall maintenance will therefore remain the responsibility of YW. Maintenance of some systems could be outsourced (e.g. a SaaS solution), but the software maintenance vendors will likely be different to those providing meter asset and comms management.
Customer Ops and Benefit Realisation Resource	Teams to drive benefit realisation (particularly for leakage and PCC)	R	• Benefit realisation capabilities are key to the success of the Smart programme in delivering customer value. YW will retain overall responsibility for benefit realisation and associated customer engagement.
Meter Reading	For non AMI meters, or AMI meters not connected properly.	A	• TBC who will have responsibility for any ad-hoc reading due to AMI meter faults.

4. Qualitative HM Treasury Value for Money Test

Area	Test	RAG	Justification
Validity	Will there be sufficient scope definition by draft Ofwat submission	G	• We believe the scope of the project is well defined, with a view of which components (asset, installs, comms and maintenance) are suitable for DPC.
	Prior to DPC submission, can a clear scope, measurable output specification, and payment mechanism be defined	A	• Whilst the scope of the Smart programme is well known, there remains a risk around how the DPC scope will be bundled, so whether the 4 components (asset, installs, comms, maintenance) will be met under one management and payment framework, or whether multiple frameworks are needed. Moreover, there is risk that YW will not be able to find an appropriate offer from a vendor to manage the whole piece and therefore accept associated risks at a reasonable cost. An insufficient number of vendors willing to take the CAP/Prime role across all areas of asset, install, comms and maintenance may also impact procurement effectiveness. • Therefore, certain decisions around procurement bundling and payment terms and value for money may not be possible until procurement has commenced, which will be after the Ofwat pre-procurement review.
	Will the project/programme transfer operation of existing assets.	A	• If any assets are installed prior to DPC contract execution, YW could have the opportunity to request that vendors transfer assets to the DPC scope. This could include AMI assets installed in AMP 7 (trials), and any assets installed in AMP 8 before contract execution (mainly optant and new connections). • The volume of such assets can be estimated but is not known for certain as these are customer driven install events.

			• Whilst YW has stated a desire to transfer such assets to the CAP, the final decision over whether assets will be transferred will likely be confirmed during procurement based on a view of proposed value for money analysis based on the CAP procurement proposals.

	Are there known potential areas of material change during the DPC period that can't be managed affordably through a contract.	A	• There are two uncertainty areas for Smart roll-out:
			  ○ Type of installs – YW will estimate the type of installs required for each premise in scope of the Programme, however there will remain some risk as trials have shown that some intalls/sites can be more complex than expected, pushing up install costs, creating a risk for any potential CAP.
			  ○ Volume of installs – whilst the volume of replacement installs is known, the volume of optant and new connection installs can only be estimated. This can create a risk for CAPs as the volume of installs could be greater than expected.
			• There may be methods of mitigating some of the risk, such as a risk premium, variable cost components of the DPC contract, or a clause where extra funding can be sought.
			• However, any premiums and/or recharge caveats could reduce the Value for Money of DPC, and this impact may not be fully confirmed until procurement commences.

	Are there high levels of future technology risk or uncertainty	G	• The technology risk for Smart is low to moderate. Some key risks are:
			  ○ Vendor's ability to stand-up sufficient comms network capacity and reach to meet desired comms success targets (c.95%). Failure to do this can notably impact YW benefits. This risk could be partly managed through contract SLAs.
			  ○ Reliability of meter and AMI assets. Whilst asset providers will provide a warranty, replacement of assets itself is often not covered leading to a cost and benefit risk. YW will look

			to mitigate this through contract SLAs, warranties, and testing of meters as part of procurement and mobilisation. ○ It may be possible for some of this risk to be transferred to the CAP, although impact on risk and cost premiums will need to be considered.
Desirability	Can DPC manage whole life risks better than traditional method?	A	• It is unlikely that DPC will reduce the risks associated with Smart roll-out. • Whilst many potential CAPs will have experience of Smart roll-out in Energy, experience in Water is more limited. • There may be an option to outsource some risk cost to CAPs, however this may result in a risk premium cost which may impact the Value for Money of DPC. This will not be fully known until procurement is underway. • As part of the Smart delivery scope will remain with YW (IT, Programme Mgt, Ops Teams, Benefit Realisation), YW will also remain responsible for overall programme delivery and coordination. Therefore, there will remain notable shared risk even if DPC was used as a procurement method.
	Is there scope for innovation in design/service (operations) provision to unlock value?	R	• Smart allows for less innovation than some other construction and transformation projects. Much of the overall design work will be completed by YW rather than the CAP, given that processes and journeys run across areas of varied responsibility. • CAPs may be able to provide some design innovation around comms networks to help increase connectivity and comms success rates. However, this could also be achieved through a non-DPC approach. • CAPs may also be able to use economies of scale (across multiple water companies if applicable) to have a more secure and efficient sourcing strategy for assets. Again this could also be achieved via a non-DPC approach.

	Will the project enable multi-AMP investment (spreading cost)?	G	• One of the advantages of DPC to YW will the ability to spread cost, and customer payments via bills, across multiple AMPs. It is possible to contract for the lifecycle of a meter asset, so circa 15 years across 3 to 4 AMPs. • This will have the advantage of improving customer affordability, whilst still enabling faster benefit realisation.
Achievability	Is there sufficient market interest and capacity for construction and delivery? AND Is the project/programme sufficiently attractive to investors?	A	• There is notable market interest in supporting the YW Smart roll-out. • However, the roles vendors are willing to assume does vary. Some vendors are only willing to be responsible for one component of delivery (comms and assets or installs/maintenance), a small number (one or two) would be more willing to take on overall 'Prime' responsibility across all components in scope of DPC, whilst others would be willing to provide financing for the whole scope but wouldn't want to assume overall management for delivery. • YW wouldn't necessarily want to rule out a large proportion of the potential vendors by restricting scope to only those willing to offer financing and 'Prime' responsibility over the full scope, as this could lead to worse value for money outcomes due to notably reduced competition and options. • As such the approach to grouping delivery and providing finance may need to be revisited during the PQQ and a decision on best value for money and management of risk made at that point.
	How challenging will it be for YW to procure and manage the project/programme?	A	• Smart programmes are typically challenging to manage, and come with notable cost, timeline, and quality risks (as illustrated with the Energy Smart roll-out). YW will need to ensure a suitable project team and controls are in place to ensure project success. • Procurement will also be a new challenge to YW, as the scale of Smart roll-out, financing options on offer (DPC, CAC, and Alternative Financing), and vendor grouping options are new to Water

			companies. The approach is also new to potential vendors themselves. It is therefore safe to assume that the procurement process will be more complex, require more focus and effort, and may take longer than traditional procurement approaches. Section 6 provides an indicative timeline that shows that a more complex DPC procurement could potentially take 9-12 months longer than a traditional procurement approach.
	Timing of outcome: Are the performance outputs required earlier than a DPC route could practically deliver (assume 2 years)?	R	• The YW Smart benefit case covers customer side leakage benefits, PCC benefits, read related benefits, and a small amount of customer service benefit. • The key benefits will be in the areas of reduced leakage and PCC. • Any delay in benefit realisation in AMP 8 will reduce ODI benefit achieved, and will impact the WRMP, potentially requiring alternative investment to help balance water demand-supply which will impact the overall Smart benefit case, as well as requiring alternative Capex investment which is currently constrained. • If contract execution is not possible from the start of AMP8, there will also be a cost implication due to end of life meters needing to be read manually, as they cannot be replaced until contract execution and mobilisation. • There is a real risk that the extended procurement timelines of DPC could mean that contract execution may not start until early 2026, therefore reducing benefit realisation in AMP8 and increasing associated mitigation costs.

5. Initial Value for Money Analysis:

5.1 Funding Scenario Overview

For this VfM analysis we are focused solely on the c.£210m of costs associated with components in scope for DPC, namely assets, installs, comms, and maintenance. There is further c.£40m of delivery cost related to IT changes and programme and benefit delivery that would need to be funded separately (much of this could utilise enhance funding, but there will be some base cost).

The funding options for costs related to Smart assets, install and comms must be considered together to determine a relative VfM, as well as a view of customer affordability. There are three main funding options available:

- **Cost Adjustment Claim (CAC)** – whilst YW can apply for additional funding for the enhance cost elements of the programme, it will not necessarily receive funding for the full base cost (beyond the amount typically allocated each AMP for meter installs/replacement, which was c.25m in AMP 7). Circa 70% of the programme cost will be 'base cost' due to 1.4m AMR meters reaching end of life within the AMP, with a Base replacement cost of c. £144m. This leaves a large funding gap of over £100m. A Cost Adjustment Claim is a mechanism through which YW could request higher base funding for meter replacement costs. Such a claim will need to show that AMP 8 install requirements are nontypical and explain why this is the case and illustrate how the proposed approach offers value for money. There may also be a need to evaluate wider base funding impacts on other water company funding. If approved, the CAC may cover most of the shortfall of base funding. One further consideration is that YW has reallocated some of the AMP 7 base allocation (c. £25m) to other high priority AMP 7 investments, rather than using this for meter replacements, so a CAC may need to deduct this value from the amount requested for AMP 8. A CAC would allow YW to internally finance the programme and minimise bill impacts by spreading payments via a RCV run-off.

- **DPC –** DPC can also be used to mitigate a large proportion of the base funding gap. If approved by Ofwat, DPC would fund the enhance and base elements of the programme cost within scope, minus the base amount allocated for meter replacements in AMP8 (this was c.25m in AMP 7). Ofwat could potentially take a similar approach to the CAC and deduct the amount of meter replacement funding not used in AMP 7 from the DPC amount. DPC also allows for repayment to be spread across multiple AMPs, with YW and CAPs potentially spreading payments for the lifecycle of the asset (c. 15 years). DPC can allow for CAPs to offer attractive financing arrangements. However, recovery of all debt and cost of capital within 15 years could lead to larger bill impacts across asset lifetime when compared to a RCV run-off. Nevertheless, if YW have concerns around ability to finance the programme DPC may offer an opportunity to remove this constraint. Based on experience of DPC programmes to date, DPC may also have a longer procurement lead-time (circa 9-12 months) which may impact benefit realisation in AMP 8 and require additional WRMP funding to address a resulting imbalance.

- **No new funding from Ofwat –** YW does have the choice to not follow either option above. YW may obtain funding within AMP 8 for the enhance elements of the programme but would need to directly fund the gap between base allowance and the required base funding for Smart (over £100m of cost).

Alternative (off balance sheet) vendor financing options could be an option for each of the cost scenarios above. This may be an attractive option if YW has concerns around ability to finance the programme.

5.2 Initial Financial Data for Each Option:

The following table provides an overview of each option:

- The internal financing and CAC funding option is illustrated with a 6.67% RCV run-off rate. There may be a funding shortfall of c.£15m-25m due to reallocation of base meter replacement costs in AMP 7.
- DPC is illustrated with a 15-year linear depreciation/repayment over the asset lifecycle (a typical approach for metering/data as a service for example). As with CAC, there could potentially be a funding shortfall of c.£15m-25m due to reallocation of base meter replacement costs in AMP 7.
- We have been informed by some potential CAPs that they hope to be able to match the YW WACC and interest rates, so we have assumed this in the modelling. We have assumed that DPC and CAC have a similar WACC (3.29%) and interest (2%) for the modelling. However, the ability of CAPs to match internal funding cost of capital will need to be further validated. CAPs have not given any indication that they will be able to improve on the assumed internal funding WACC (3.29%) and interest (2%).
- The modelling indicates that value for money could be similar across the CAC and DPC options.
    - In the model, DPC has a lower cost of capital by c.£35m across the 15 years of repayments. This is because the RCV method used for CAC modelling does not depreciate linearly and depreciates slower in later years, leading to a higher cost of capital in later years.
    - However, as DPC will likely start later due to a longer procurement lead time, the benefit impact of the delays has been modelled at c.£31m (for a 12-month delay). This mostly offsets the lower cost of capital for DPC, meaning that overall value for money between the two options is similar.
- A 12 month delay due to DPC could also reduce the volume of installs in the AMP by c.300k, delivering less value to customers, and less opportunity for customers to reduce their leakage and therefore their bill charges.
- The combined CAC and internal funding (RCV) approach used for internal financing does potentially allow for a smaller bill impact for existing customers over the asset lifetime. An RCV approach could allow for a c.£30m reduction in customer payments over the asset lifetime compared to a linear depreciation approach, assuming a similar deployment profile.

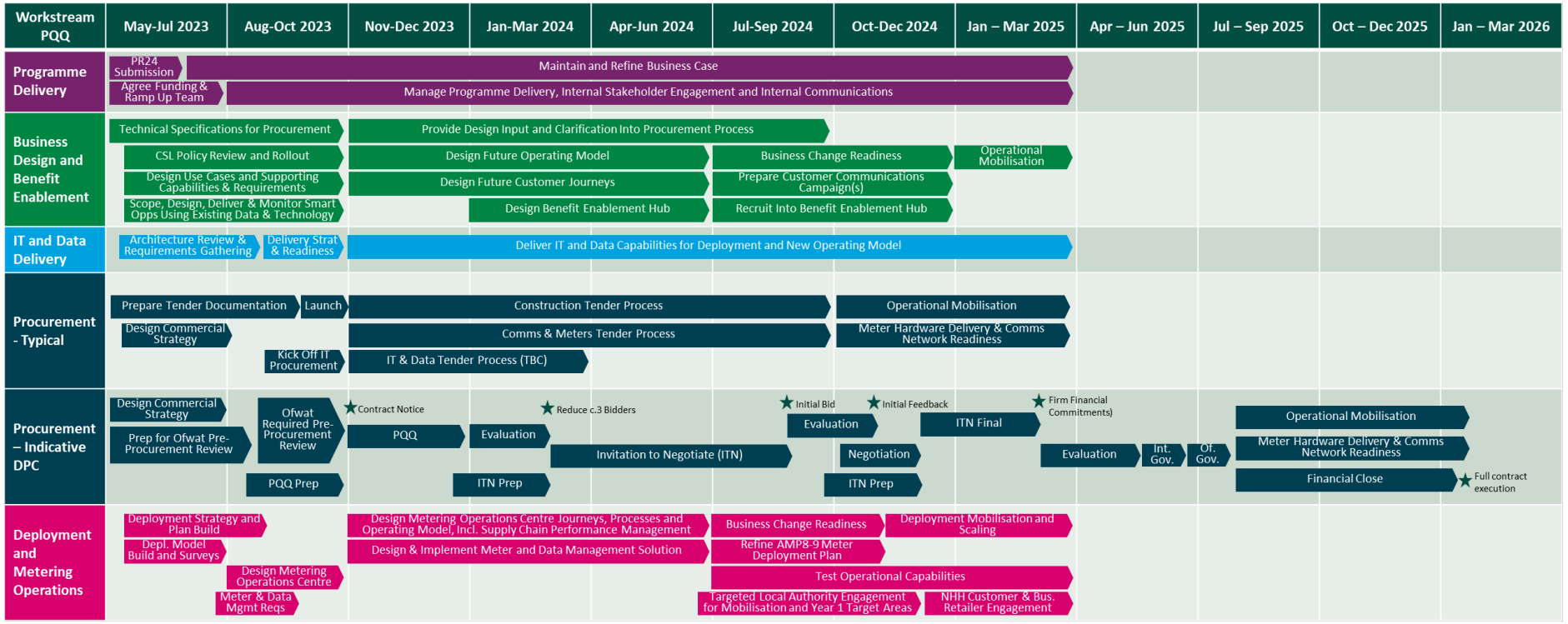
			Indicative Cost/Payment Profiling								Total	Benefit Impact
			AMP8					AMP9	AMP10	AMP11		
			2025-6	2026-7	2027-8	2028-9	2029-30					
Internal Cost - 6.67% RCV Run-off	Asset, Install and Comms	Volume of Installs	184,130	322,709	391,999	391,999	322,709				**1,613,545**	
		Base Cost - Asset, Install, Comms (£m)	£14.36	£28.72	£35.90	£35.90	£28.72				**£143.59**	
		Enhance Cost - Asset, Install, Comms (£m)	£7.49	£9.78	£11.39	£12.18	£12.00				**£52.83**	
		AMP 8 Maintenance Cost (£m)	£0.03	£0.12	£0.23	£0.36	£0.47				**£1.20**	
		Base Contingency / Risk Premium (£m)	£1.44	£2.87	£3.59	£3.59	£2.87				**£14.36**	
		Enhance Contingency / Risk Premium (£m)	£0.75	£0.98	£1.14	£1.22	£1.20				**£5.28**	
		Base Indicative Return on RCV @ 3.29% (£m)	£0.25	£1.00	£2.10	£3.28	£4.28	£20.86	£16.31	£12.75	**£60.82**	
		Enhance Indicative Return on RCV @ 3.29% (£m)	£0.13	£0.43	£0.78	£1.16	£1.53	£7.60	£5.94	£4.64	**£22.22**	
		Revenue	£1.19	£4.43	£8.93	£13.75	£17.99	£88.14	£68.91	£53.88	**£257.21**	
		Terminal Value									**£92.30**	

			Indicative Cost/Payment Profiling								Total	Benefit Impact
			AMP8					AMP9	AMP10	AMP11		
			2025-6	2026-7	2027-8	2028-9	2029-30					
Linear Depreciation - No DPC	Asset, Install and Comms	Volume of Installs	184,130	322,709	391,999	391,999	322,709				**1,613,545**	
		Base Cost - Asset, Install, Comms (£m)	£14.36	£28.72	£35.90	£35.90	£28.72				**£143.59**	
		Enhance Cost - Asset, Install, Comms (£m)	£7.49	£9.78	£11.39	£12.18	£12.00				**£52.83**	
		AMP 8 Maintenance Cost (£m)	£0.03	£0.12	£0.23	£0.36	£0.47				**£1.20**	
		Base Contingency / Risk Premium (£m)	£1.44	£2.87	£3.59	£3.59	£2.87				**£14.36**	
		Enhance Contingency / Risk Premium (£m)	£0.75	£0.98	£1.14	£1.22	£1.20				**£5.28**	
		Base Indicative Cost of Capital @ 3.29% (£m)	£0.26	£1.04	£2.17	£3.39	£4.42	£21.01	£14.01	£7.11	**£53.40**	
		Enhance Indicative Cost of Capital @ 3.29% (£m)	£0.13	£0.42	£0.75	£1.08	£1.37	£6.51	£4.31	£2.19	**£16.77**	
		Indicative Repayment (£m)	**£0.39**	**£3.06**	**£7.36**	**£12.39**	**£17.26**	**£99.98**	**£90.79**	**£56.33**	**£287.57**	

			Indicative Cost/Payment Profiling								Total	Benefit Impact
			AMP8					AMP9	AMP10	AMP11		
			2025-6	2026-7	2027-8	2028-9	2029-30					
Linear Depreciation - DPC	Asset, Install and Comms	Volume of Installs	0	184,130	322,709	391,999	391,999				**1,290,836**	
		Base Cost - Asset, Install, Comms (£m)	£0.00	£14.36	£28.72	£35.90	£35.90				**£114.88**	
		Enhance Cost - Asset, Install, Comms (£m)	£0.00	£7.49	£9.78	£11.39	£12.18				**£40.84**	
		AMP 8 Maintenance Cost (£m)	£0.00	£0.03	£0.12	£0.23	£0.36				**£0.74**	
		Base Contingency / Risk Premium (£m)	£0.00	£1.44	£2.87	£3.59	£3.59				**£11.49**	**£31m Reduction**
		Enhance Contingency / Risk Premium (£m)	£0.00	£0.75	£0.98	£1.14	£1.22				**£4.08**	
		Base Indicative Cost of Capital @ 3.29% (£m)	£0.00	£0.26	£1.04	£2.17	£3.39	£17.37	£11.85	£6.09	**£42.16**	
		Enhance Indicative Cost of Capital @ 3.29% (£m)	£0.00	£0.13	£0.42	£0.75	£1.08	£5.38	£3.64	£1.86	**£13.27**	
		Indicative Repayment (£m)	**£0.00**	**£0.39**	**£3.06**	**£7.36**	**£12.39**	**£80.12**	**£72.85**	**£51.36**	**£227.53**	

6. Appendix – Example Smart Pre-Contract Plan

The Plan below shows a typical procurement process versus an indicative timeline for DPC (see dark blue sections).



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