Appendix 25: Introduction to Our Enhancement Cases

YKY25_ Introduction to Our Enhancement Cases

YorkshireWater

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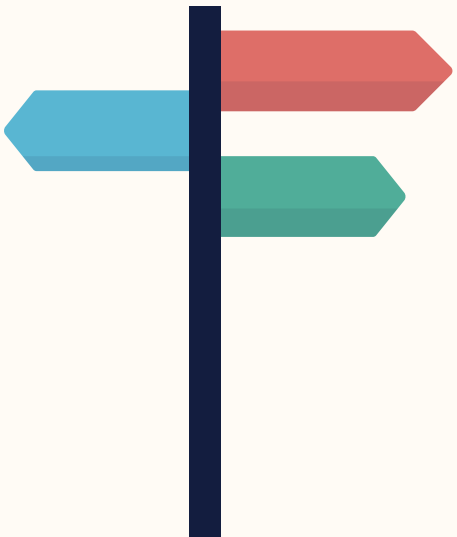
This icon can be clicked on to go to the main Yorkshire Water Business Plan document where more information can be found.

More detail on this subject can be found in **Chapter 8 Part 2: What our plan will deliver**



Contents

Introduction to Our Enhancement Cases

Glossary

• AMP	Asset Management Period
• CNI	Critical National Infrastructure
• Defra	Department for Environment, Food & Rural Affairs
• DWMP	Drainage and Wastewater Management Plan
• DWI	Drinking Water Inspectorate
• EA	Environment Agency
• LTDS	Long Term Delivery Strategy
• WINEP	Water Industry National Environment Programme
• WRMP	Water Resource Management Plan
• SEMD	Security and Emergency Measures Direction
• NIS	Network & Information Security Directive

1. Our AMP8 Enhancement Programme

Our AMP8 enhancement programme is the largest we have ever proposed but is needed to meet the requirements of both our regulators (EA, DWI etc) and our customers. With our regulators, we share the ambition to protect the environment, continue to produce reliable and high-quality water and to meet the expectations of both our current and future customers.

The overall programme is £2,812.31 (£597.9 for water and £2,214.4m for waste), with £2,074.4m being WINEP, £583.1m for other statutory cases (defined lines within the reporting tables) and £154.8m on choice cases.

We have been working hard with our supply chain and service partners to ensure they understand the scale of the proposed programme, we discuss the steps that have been taken to build confidence in the delivery of this plan in section 8.16 in Chapter 8 of our main business plan.

More detail on this subject can be found in
Chapter 8: Our Plan

We have grouped our expenditure into cases with related drivers, some of which overlap the reporting lines in tables CW3 and CWW3, we identify where this is the case.

The costs set out in this document and in the individual cases (including our proposed PCDs) are reported in line with the CW3 and CWW3 tables and are therefore prior to any application of frontier shift efficiency or real price effects.

[1] This does not include the expenditure on schemes that is currently being assessed as suitable for DPC

2. AMP8 Proposed Expenditure

2.1 Water

Table 2.1: Water Enhancement Case Expenditure

Case	Driver (where appropriate)	Reporting Lines	AMP8 Enhancement Expenditure (£m)
Water quality improvements (DWI)	Addressing raw water quality deterioration	CW3.91-93	40.8
	Improvements to taste, odour and colour	CW3.97-99	32.4
	Lead	CW3.103-117	21.4
Water Resilience		CW3.118-120	0.0[2]
Supply-Demand	Supply side improvements	CW3.41-43	174.7
	Demand side improvements	CW3.44-46	18.1
	Leakage improvements	CW3.47-49	23.5
Metering		CW3.60-89	134.1
Clean Water WINEP	Driver breakdown given in WINEP Enhancement Case	CW3.1-39	82.6
Security – SEMD		CW3.121-123	25.0
Security – Cyber		CW3.124-126	24.1
Security - ECAF		CW3.132-133	10.4
Total			**587.1**[3]

2.2 Wastewater

Table 2.2: Wastewater Enhancement Case Expenditure

Case	Driver (where appropriate)	Reporting Lines	AMP8 Enhancement Expenditure (£m)
Growth at Sewage Treatment Works		CWW3.153-155	37.7
Living with Water		CWW3.181-182	26.3
Appropriate Measures		CWW3.187-188	118.2
Coastal Bathing Water Overflows		Included in WINEP [£266m]	
Wastewater WINEP	Driver breakdown given in WINEP Enhancement Case	CWW3.1-152	1,991.8

[2] All expenditure for Water Resilience is DPC so does not show in table CW3 instead is listed in SUP12 (£133.5m)
[3] Variance to CW3 total is the GHG case in Table 2.3

Total	**2,174.0**[4]

We are not proposing enhancement expenditure for all the reporting lines in tables CW3 and CWW3, we have listed those with no proposed expenditure in

2.3 Cross-Business

Table 2.3: Cross-Business Enhancement Case Expenditure

Case	Driver (where appropriate)	Reporting Lines	AMP8 Enhancement Expenditure
Net Zero (Greenhouse Gas Reduction)		CW3.127-129 CWW3.177-179	10.8 40.5

3. Our approach to writing the enhancement cases

We have followed the guidance in Ofwat's methodology in Appendix 9, Annex 1 when writing our enhancement cases[5].

Where we have been able to answer sections of this methodology at a programme level we have done so in sections 5 and 6 of this document, where this is not the case we have answered those sections on a case by case basis.

[4] Variance to CW3 total is the GHG case in Table 2.3

[5] PR24_final_methodology_Appendix_9_Setting_Expenditure_Allowances.pdf (ofwat.gov.uk)

4. Our AMP8 cases

Table 4.1: Water Enhancement Cases

Case	Description
WINEP – Water Read more about this at **WINEP Enhancement Case**	This is made up of 5 subcases (these are all discussed in more detail in our WINEP appendix): • Fish passage & river restoration • Fish & eels protection • Surface Water catchment management programme • Water resources • Biodiversity & Invasive species
DWI Read more about this at **Water Quality Improvements Enhancement Case**	Following DWI guidance, we are investing in three central water quality drivers: • Unsatisfactory taste/odour/colour • Raw water deterioration • Lead
Water Resilience Read more about this at **Water Resilience Enhancement Case**	The Water Supply System (WSS) Strategy project's aim is to take a systems approach to long-term water supply resilience across Yorkshire Water's water supply area. We propose to progress resilience enhancement schemes in AMP8 for systems which have the largest number of properties with a single source supplyt, particularly where they significantly exceed our SEMD threshold (34,000 properties), which represents the maximum area we could support with alternative bottled / tankered water supplies in an emergency.
Supply-Demand Read more about this at **Supply-Demand Enhancement Case**	We have prepared our Water Resources Management Plan in line with Environment Agency guidelines and are investing in these key areas: • Leakage • PCC/Water Efficiency • Business Demand • Supply Side Improvements
Metering Read more about this at **Metering Enhancement Case**	Customer metering is an important tool in driving service improvement across a range of performance commitments. We plan to replace the majority of our customer metering asset base with the latest metering solution Advanced Metering Infrastructure (AMI).
Security – SEMD Read more about this at **Security SEMD Enhancement Case**	To ensure the security of Yorkshire Water's Critical National Infrastructure from physical threats, is upgraded, ensuring compliance with both statutory obligations and Water UK Security Standards, coupled with horizon scanning for evolving external threat actors.
Security – Cyber Read more about this at **Security Cyber Enhancement Case**	The investment streams detailed in this enhancement case have been developed in response to a rapidly evolving and deteriorating cyber threat environment and an evolving regulatory environment, underpinned by the Networks & Information Systems (NIS) regulations.
Security - ECAF Read more about this at **Security ECAF Enhancement Case**	This submission is in response to the roll out of the Enhance CAF by the DWI in June 2023 and the need to reconfigure a sub-set of the control networks on the company's Clean treatment works to comply with the requirements of the ECAF.

Table 4.2: Wastewater Enhancement Cases

Case	Description
WINEP – Wastewater Read more about this at **WINEP Enhancement Case**	This is made up of 12 subcases (these are all discussed in more detail in our WINEP appendix): • River water quality investigations • River Water Quality Improvements • Water quality investigations and monitoring: Chemicals and microplastics • Investigation into Nitrogen Removal Technically Achievable Limit • Schemes to meet the 25-Year Environment Plan • Inland Bathing Water Quality • Storm overflows reduction • Monitoring of discharges • River water quality monitoring • Septic Tank Removal and Replacement • Schemes driven by population numbers • Improve the resilience of recycling sludge to land
STW Growth Read more about this at **Growth at Sewage Treatment Works Enhancement Case**	This enhancement case covers two scenarios where catchment growth drives investment need: • Growth in the catchment means that the site will become overloaded and will no longer be compliant with its permit conditions. • Growth in the catchment means that the Dry Weather Flow limit in the permit is breached and a new permit is required. Due to the requirements of the permit and the growth in the catchment the site is then overloaded and cannot achieve compliance with the new permit conditions.
Living with Water Read more about this at **Living with Water Enhancement Case**	This case is to continure to reduce the risk of flooding and improve the resilience of Hull and the surrounding area to forecast climate change and sea level rises. The Living with Water partnership is a collaboration between Yorkshire Water, Hull City Council, East Riding of Yorkshire Council and the Environment Agency to manage flood risk in the area. Hull University are the academic partner of Living with Water. The partnership will collaborate to install key enabling infrastructure for a new surface water network which will reduce reliance upon the combined sewer network to drain the city. This will allow for further infrastructure to be installed in future AMPs significantly increasing the resilience of the catchment.
Appropriate Measures Read more about this at **Appropriate Measures Enhancement Case**	The Environment Agency (EA) published the 'Biological waste treatment: appropriate measures for permitted facilities', commonly known as Appropriate Measures (AM) in September 2022. It introduces more prescriptive and tighter controls than the existing Industrial Emissions Directive (IED) requirements.
Coastal Storm Overflows (outside PR24 WINEP) Read more about this at **Coastal Bathing Water Overflows Enhancement Case**	The purpose of this enhancement case is to reduce storm overflow discharges at our designated coastal bathing waters and support with the improvement of bathing water quality. This enhancement case sits outside the WINEP and supports our company ambition to deliver all our coastal storm overflows ahead of the 2035 deadline set out in the Government's Storm Overflow Discharge Reduction Plan.

Table 4.3: Cross-Business Enhancement Cases

Case	Description
Greenhouse Gas Reduction Read more about this at **Net Zero Enhancement Case**	Our enhancement case is aimed at delivering reductions in GHG emissions aligned to the UK Government's glide path to net zero emissions. In the shorter-term, our commitment to tackle operational GHG emissions (Scopes 1 and 2) has been challenged by the scale of additional GHG arising from wider compliance programmes (particularly WINEP) and there is a need for additional enhancement investment to tackle increased energy use and process emissions. This enhancement case will support base investment to bring down other emission contributors such as business travel and improve energy efficiency and reduce use of high carbon fuels.

5. Need for investment

We discuss the need for investment in each of the individual cases.

5.1 Interactions with Base Expenditure

Please see the expenditure tables at the beginning of each of the cases.

5.2 Long-Term Delivery Strategy (LTDS) Alignment

Where relevent we have aligned the enhancement cases with our LTDS.

Read more about this at
Long Term Delivery Strategy

6. Best Options for Customers

6.1 How our customers have shaped our enhancement cases

6.1.1 Customer and stakeholder engagement

Our business plan has been built with consideration of our regulatory and statutory requirements at its core, but with our customers and stakeholders also at the heart of it, helping us to validate priorities, targets and, where we need to, make additional investment to meet their needs. Our substantial customer research programme was developed to support the building blocks of our business plan, which include key strategies feeding into it, such as our Long-Term Delivery Strategy (LTDS), Water Resources Management Plan and Drainage and Wastewater Management Plan. Chapter 6 outlines the detail of the engagement we have undertaken and supports customer support for additional expenditure on enhancement cases.

Our plan and the proposed enhancement cases included are supported by our customers. 78% of customers found our plan acceptable in our customer research study which followed Ofwat guidelines and 79% of customers found our plan acceptable in our own independent affordability and acceptability study. In addition, the Yorkshire Leaders Board (a collective of the councils and Mayoral Combined Authorities within Yorkshire that work together to take a strategic approach to important issues affecting the Yorkshire and Humber area) have written a letter of support endorsing our plan.

6.2 Cost benefit analysis

6.2.1 Decision Making Framework

The Decision-Making Framework (DMF) is an evolution of our historic approach to making TOTEX investment decisions and was successfully implemented and used for the first time at PR19. The implementation of the DMF aims to deliver best value investments based on robust information, which coordinates our people, processes, governance and systems in an integrated manner.

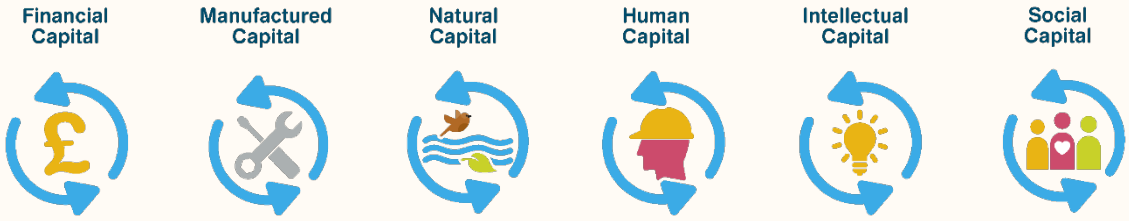
The DMF is the main tool that we use to identify the optimal programme of investment to deliver what is required against service levels, performance commitments and statutory requirements. The DMF supports an efficient and consistent comparison of thousands of solution options to give our customers the greatest benefits, whilst meeting financial and service constraints.

We believe that an *efficient decision* is one which delivers the greatest benefit to customers in the long-term for the lowest whole life cost, as opposed to simply being the cheapest option in the short-term- this is central to the philosophy of the DMF.

The DMF process starts by identifying and expressing risks to service through both modelled and manually considered approaches, identifying the size and scale of each risk before suggesting potential interventions to address them.

Each risk and solution is quantified against our Service Measure Framework (SMF) which has been developed together with our customers. The SMF quantifies the impact & key benefits of our investments, whilst the decision-making framework considers the benefits arising from changes in these service levels. As a means of example, the Service Measure Framework will monetise the impact of a service risk (for example Pollution incidents) across our six capitals (Figure 1) (Financial, Human, Intellectual, Social, Natural, Manufactured) to allow a comparison between a risk (need) and a solution.

Figure 1: The Six Capitals



The Six Capitals are crucial at giving a balanced view of service benefit beyond the financial whole life cost aspect – for instance it can help us to identify solutions which are more beneficial to the environment or perhaps meet or exceed our customer expectations, beyond capital or operational cost.

6.2.1.1 Identifying Risks and Solutions

Many of our base maintenance risks are assessed using a suite of asset deterioration models but not all our risks can be modelled this way as not all risks are related to failure of assets due to age and condition. Enhancement investment typically addresses other non-asset failure business related risks and are identified through different routes such as assessment of existing asset performance and capabilities against newly emerging regulatory and environmental standards. We identify these risks and the associated solutions through a series of 'Project Charters'.

Assessment is typically carried out by subject matter experts and scored against the six SMF categories to ensure that both modelled and non-modelled risks can be considered consistently by the DMF's downstream optimisation processes.

6.2.1.2 Producing an Efficient Plan

The data generated through both asset modelling and the Project Charter process allows us to identify the expected service and compliance impacts of failure events through time. As a result, we can estimate current and future service levels with and without investment.

Risks are entered into our DMF tool as investment needs, with one or more solutions attached enabling multiple whole life cost comparisons. The risks are stored within the DMF where we also capture the relevant cost, output and activity information needed for effective asset management.

We then run the optimisation and decision-making processes in DMF, producing optimised investment scenarios which take into account the risks and solutions previously entered and a series of programmable goals, boundaries and constraints within which to work.

6.2.1.3 Quantifying the Cost of our Plan

We predict and forecast the capital expenditure cost of our solution options using our unit cost models which collectively form our Unit Cost Database (UCD). These models have been developed using historic costs from delivered projects and schemes, which have been inflated to current price base, giving a unit cost for various types of physical assets across our portfolio. Where we plan to deliver a 'new' activity for which we do not have historic costs, we use a compbination of industry datasets, specialist consultant and supplier costs.

In addition to the capital expenditure forecast for each solution option, we also consider the operational expenditure impact, calculating spend where appropriate in areas such as energy use, chemical use, sludge transportation or staffing level changes.

As well as capital expenditure-based solutions we also consider operational expenditure-based solutions or solutions which are a mixture of the two approaches. Where we have multiple solution options we test for the best balance of costs and service level improvement using the economic modelling embedded into our portfolio optimisation process in the DMF.

6.2.1.4 Quantifying the Benefit of our Plan

We have an enhanced approach to understanding the benefit of our solutions, aligning our processes to the Six capitals framework shown in Figure 1. Rather than exclusively valuing customer willingness to pay and the financial benefits to Yorkshire Water we also look at the wider benefits of our investment decisions including their impact on the environment (natural capital), people (human capital) and society as a whole (social capital).

Each service measure in our SMF is mapped to one or more of the six capitals and assigned a monetary unit rate where applicable (for instance, environmental cost). Both traditional and innovative approaches have been used to populate these valuations using high confidence data from internal and external sources. Changes in each service level are monetised using these rates and this gives a quantified assessment of the benefit of changes in service levels which are comparable across risk and solution types.

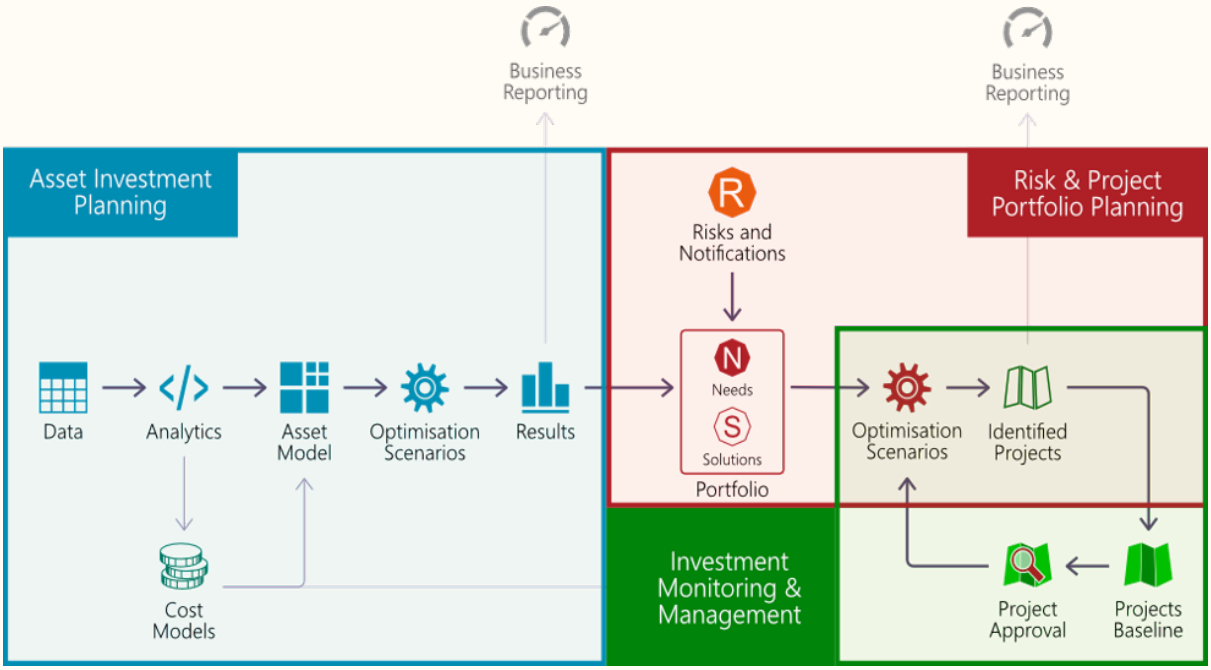
Using this approach, we can understand the impact of existing asset failures and the benefit of fixing them, where that benefit is considered across all six capitals. It also allows the evaluation of more creative long term, enhanced environmentally friendly solutions against more traditional solutions on an equitable basis. We apply this approach as a framework across our whole investment programme and not just as an assessment on individual solutions.

The output of the application of the six Capitals framework is an annualised benefit valuation (£) which can then be combined with financial costs to give a net present value used to derive the overall cost benefit of a given solution. To read more about this subject, see Chapter 3: Environmental and Social Value

6.2.1.5 Portfolio Optimisation

At the completion of asset modelling and Project Charter development and the quantifying of cost and benefit, we move on to the active decision-making phase of our process. The EDA Asset optimisation engine is used to assess all our collected data through the EDA Portfolio Optimisation Model.

Figure 2: EDA Portfolio Optimisation Model



The EDA Portfolio Optimisation Model is used to run a series of calculations which apply all the SMF valuation rates to select & pick the best mix of solutions to meet a given set of objectives (cost & service constrains) set within the optimiser settings; Tens of thousands of calculations are made, and options ranked for the overall best net-benefit, ensuring that the programme of proposed investment delivers the optimal outcome for our customers and the wider business.

Hundreds of scenarios can be run, considering the impact of future asset risks, or looking for the optimal outcomes in differing situations i.e., looking for the least carbon intensive outcome or for the greatest reduction in hydraulic sewer flooding. As a result of the standardisation introduced by the SMF, we can be sure that all risks across the business are considered in a consistent manner.

As part of our drive to meet ever changing business needs and satisfy our need for cost efficiency, we continuously run, review, and rerun optimisations in an iterative way, to best deliver our investment needs across our entire asset base, whilst ensuring a robust, empirical view of investment benefit is measured and quantified as part of our plan.

6.2.2 WINEP CBA Process

We followed the cost benefit analysis (CBA) guidance provided by the Environment Agency when developing our solutions for the WINEP programme. We set out our approach for Net Present Value analysis in Appendix D – Economic evaluation in the WINEP Enhancement Case, which sets out our approach consistent with the WINEP Options Development Guidance.

Read more about this at
WINEP Enhancement Case

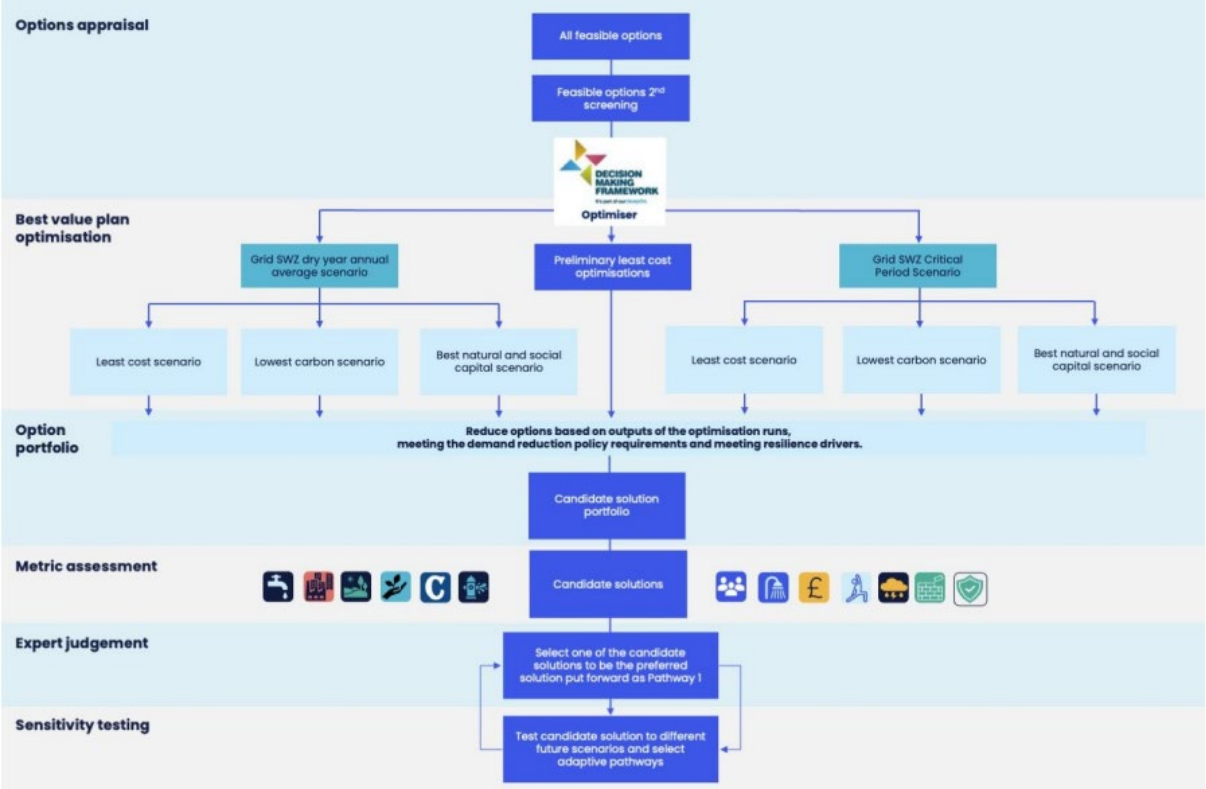
6.2.3 WRMP CBA Process

In developing our draft water resource management plan (WRMP) we carried our a problem characterisation assessment on our Grid Surface Water Zone (SWZ). We reviewed the possible methods we could use to determine the best value solution to the deficit and developed our approach using the following guidelines:

- WRMP24 WRPGL;
- The economics of balancing supply and demand (EBSD) (UKWIR, 2002);
- UKWIR WRMP 2019 methods - Decision Making Process: Guidance;
- UKWIR WRMP 2019 methods - Risk Based Planning: Guidance; and
- UKWIR Deriving a Best Value Water Resources Management Plan (HR Wallingford 2020).

The outcome of our problem characterisation was that we would use 'The Economics of Balancing Supply and Demand (EBSD) Guidelines (UKWIR, 2002)' approach extended to include multi-criteria analysis (MCA) to determine a best value solution for our WRMP24. The MCA approach allows us to compare both monetised and non-monetised costs and impacts to develop a best value plan as opposed to a least cost plan using the traditional EBSD approach. Our best value plan process is summarised in Figure 3: WRMP Best Value Process below. For more details on the process we followed for the WRMP please see the Yorkshire Water Draft Water Resources Management Plan 2024 Technical Document – section 9.1.[6]

Figure 3: WRMP Best Value Process



6.3 Direct Procurement for Customers (DPC)

We have assessed our proposed enhancement programme against the DPC criteria and identified cases for which this delivery route is appropriate.

We are fully supportive of market-based approaches including DPC. Work on DPC has been ongoing for some time, reviewing the developing PR24 plan and keeping abreast of changes to Ofwat guidance. This guidance required companies to look beyond single schemes to identify potential DPCs, and for that reason, we actively sought opportunities within bundles of

[6] https://www.yorkshirewater.com/media/km2fmv4l/yorkshire-water-draft-water-resources-management-plan-2024-technical-document.pdf

investments. Following internal review, 18 investments were highlighted and reviewed for their relative attractiveness, of which 12 were for enhancement expenditure.

Table 6.1: Water Cases Assessed for DPC

Case		Met DPC Criteria?	Element Assessed?	Suitable for DPC?
DWI		No	N/A	N/A
Water Resilience		Yes	WSS Resilience Strategy (West Yorkshire WTW)	Yes
Supply-Demand		Yes	dWRMP	No
		No	River Aire to West Yorkshire WTW Raw water transfer	No
		Yes	New WTW (York)	Yes
Metering		Yes	N/A	No
Security – SEMD		No	N/A	N/A
Security – Cyber		No	N/A	N/A
Security - ECAF		No	N/A	N/A
WINEP	Fish passage & river restoration	No	N/A	N/A
	Fish & eels protection	No	N/A	N/A
	Surface Water catchment management programme	No	N/A	N/A
	Water resources	No	N/A	N/A
	Biodiversity & Invasive species	No	N/A	N/A

Table 6.2: Wastewater Cases Assessed for DPC

Case		Met DPC Criteria?	Element Assessed?	Suitable for DPC?
STW Growth		No	N/A	N/A
Living with Water		Yes	N/A	No
Appropriate Measures		No	N/A	N/A
Coastal Overflows		Yes	This is combined with the Storm Overflows Reduction case	Yes
WINEP	River water quality investigations	Yes	N/A	No
	River Water Quality Improvements (Sanitary and Nutrients)	Yes	N/A	No

	Water quality investigations and monitoring: Chemicals and microplastics	No	N/A	N/A
	Investigation into Nitrogen Removal Technically Achievable Limit	No	N/A	N/A
	Schemes to meet the 25-Year Environment Plan	No	N/A	N/A
	Inland Bathing Water Quality	Yes	WINEP (Bathing Water Improvements)	Yes
		Yes	Ilkley Bathing Water	No
	Storm overflows reduction	Yes	This is combined with the Coastal Overflows case	Yes
	Monitoring of discharges	No	N/A	N/A
	Upstream and downstream monitoring of outfalls	No	N/A	N/A
	Septic Tank Removal and Replacement	No	N/A	N/A
	Schemes driven by population numbers	Yes	N/A	No
	Improve the resilience of recycling sludge to land	No	N/A	N/A

Table 6.3:Cross-Business Cases Assessed for DPC

Case	Met DPC Criteria?	Element Assessed?	Suitable for DPC?
Greenhouse Gas Reduction	No	N/A	N/A

To ensure we were thorough in our analysis, we engaged recognised experts, Arup, to carry out external validation of this view (the full Arup report is presented in the DPC approach and assessment appendix). The Arup study focussed on applying the three key OFWAT tests, combined with the HM Treasury Value for Money tests as shown in Figure 4 below.

Figure 4: Technical Discreteness & Value for MoneyTests

Ofwat Technical Discreteness Consultation	
Scalability test	• Is real Totex>£200m over the proposed DPC duration (default 25 yrs)? • 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? • 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

This study concluded in April 2023 that of the 12 investments highlighted, and having sought any additional opportunities through engagement with relevant YW colleagues, there were four investments which would be most suitable for DPC:

New WTW (York)

West Yorkshire WTW

Smart Meters

River Water Quality Monitoring

There were a further two investments which had greater potential should changes be made to them:

Ilkley: Standalone Treatment Works
- The suitability potential increases should the value be greater when finalised and if the perceived regulatory dates of 2026 are not a blocker

WINEP: Storm Overflow Spill Reduction
- The suitability potential increases should it be possible to improve the inherent lack of discreetness through the creation of localised batches of work/asset types (e.g. the largest storm tanks) whilst retaining a scale that passes the Programme Scalability Test

Work then continued to assess these six opportunities, engaging expert partners (selected based on their specific knowledge):
- Arup – New WTW (York), West Yorkshire WTW, WINEP Storm Overflow Spill Reduction and Ilkley WWTW
- Baringa – Smart Meters and River Water Quality Monitoring

The review of options on the shortlist focussed on:
- Outline view of value for money against in-house delivery
- Market interest
- Key risks that will be retained by YW and managed by the DPC provider
- Best assessment of costs which customers will incur in AMP8

Studies were seeking to conclude whether the highlighted investments would be deemed suitable, against the OFWAT three DPC tests, and furthermore would they likely offer positive value for money for customers against in-house delivery. The Arup and Baringa reports are presented in DPC approach and assessment appendix.

Read more about this at
DPC Approach and Assessment appendix

6.3.1 Overview of the proposed schemes to progress under DPC

Studies concluded that the following schemes are suitable and offer good potential for value for money:

- New WTW (York) – DWI Case
- West Yorkshire WTW – Water Resilience Case
- WINEP - Storm Overflow Programme (discrete batches) – Storm Overflow Case and Coastal Storm Overflows

Each investment is discussed below:

6.3.1.1 Suitable investments

New WTW (York) and associated infrastructure

This investment would increase the New WTW (York) capacity within the existing site footprint, utilising spare licenced abstraction capacity at Acomb Landing WTW and an 18km bulk raw water transfer to a new WTW near the existing WTW (York), sized to provide an additional 50 Megalitres/day (ML/d) into supply. Associated with this is a WTW (York) to South Yorkshire treated water transfer. This would require over 90km of transfer main, booster pumping stations and associated break pressure tanks.

The New WTW (York) 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 transmission pipes to the South of the YWS supply area and potentially the c.18km pipe from the river to the WTW. This scheme is best suited to early or late DPC and the recommended approach to market would be a Design, Build, Fund, Operate and Maintain (DBFOM).

The potential for positive value for money (VFM) is based primarily on:

- Bankability – the scale of investment is likely to bring market interest. Investor feedback suggests this value fits within the ‘sweet spot’.
- Cost saving due to efficiency – gives the potential for savings of capex and opex during the life of the agreement.
- Technology – innovation and technology can be utilised to design and deliver the required solution.
- Complexity - Complex projects such as this can benefit from a competitively appointed provider (CAP) experience in design, construction and/or operations.

West Yorkshire WTW and associated infrastructure

This investment would deliver a new West Yorkshrie WTW with treatment capacity of 75 ML/d and 150 ML/d 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 West Yorkshire WTW. This scheme is considered to be a suitable candidate for DPC as the project is considered suitably discrete, of the correct scale and with limited O&M and construction risks. The project would be considered viable, attractive, and deliverable by a CAP and the timescales are suitable for DPC. This scheme is best suited to early or late DPC and the recommended approach to market would be a DBFOM.

The potential for positive VFM is based primarily on:

- Bankability – the scale of investment is likely to bring market interest. Investor feedback suggests this value fits within the ‘sweet spot’.
- Cost saving due to efficiency – gives the potential for savings of capex and opex during the life of the agreement.
- Technology – innovation and technology can be utilised to design and deliver the required solution.

- Complexity - Complex projects such as this can benefit from CAP experience in design, construction and/or operations.

Storm Overflow Programme

The AMP8 programme of works to reduce storm overflows to rivers and coastal waters comprises 211 schemes, selected to allow YWS to achieve but not exceed Ofwat targets for the period. A subset of this programme may be considered suitable for DPC if the right schemes are selected.

The AMP8 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. If taken in combination with the AMP9-10 Storm Overflow 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 might be attractive. Late procurement model for DPC is recommended with the market approached on a DBFM or ideally a DBFOM depending on how integrated the overflow is in the network.
The potential for positive VFM is based primarily on:

- Bankability – the scale of investment is likely to bring market interest. Investor feedback suggests this value fits within the ‘sweet spot’.
- Cost saving due to efficiency – gives the potential for savings of capex and opex during the life of the agreement.

6.3.1.2 Unsuitable investments

Studies have concluded that three of the investments are unsuitable to progress as DPC. Each investment is discussed below:

Ilkley WWTW

As part of the drive to achieve improved river water quality for the bathing water designated part of the river Wharfe at Ilkley, an option is 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 and a new WWTW which may replace both Ilkley WWTW and Burley WWTW with increased capacity.
The scheme is deemed unsuitable for DPC because the package is significantly below the £200m target for Totex (at £90m). There is also concern around timescales as elements of the delivery are required by 2026.

Smart Meters

The YW Smart metering programme intends to install c.1.6m Smart meters in AMP8, made up of c1.4m AMR end of life replacements, 150k optant installs (customer request) and 75k new connection installs. Key benefit drivers will be around customer side leakage, PCC reduction, AMR read cost reduction and customer Service benefits.

It is likely that this investment would be deemed suitable against the three OFWAT tests but does not offer the potential for positive VFM over alternative delivery solutions.

The lack of potential for VFM is mainly centred around:

- Lack of potential for innovation given market maturity of smart meters and networks
- Project finance is unlikely to be lower than YW’s cost of finance – tested through a market exploration exercise.
- Deployment via DPC would likely delay the programme start and associated benefits by at least 12 months

Further to this, it was confirmed through revised OFWAT guidance, that Smart Metering would not be suitable for DPC due to the fact that the individual assets are worth less than £5m.

River Water Quality Monitoring (RWQM)

Whilst RWQM passed the OFWAT three tests and offers the potential for VFM for customers, there was additional guidance published by OFWAT in June 2023 which explicitly ruled out the use of DPC for this investment.

7. Cost Efficiency

7.1 Our approach to developing our enhancement cases

To ensure that we deliver the best value option for customers, we have continued to utilise and refine our Decision Making Framework (DMF). Our DMF is an evolution of our historic approach to making TOTEX investment decisions and was successfully implemented and used for the first time at PR19. The implementation of the DMF aims to deliver best value investments based on robust information, which coordinates our people, processes, governance, and systems in an integrated manner. Within our DMF, we have continued to make use of our 'six capitals' – natural, human, financial, intellectual, manufactured, and social – to inform our business plan.

Each risk and solution is quantified against our Service Measure Framework (SMF) which has been developed together with our customers. The SMF quantifies the impact & key benefits of our investments, whilst the decision-making framework considers the benefits arising from changes in these service levels.

7.2 The need for investment

We have two overarching approaches to identifying project 'needs'. We have developed a suite of asset models which are able to predict asset deterioration and its service impact. This includes

- An above ground model to focus on mechanical, electrical, and civil assets across our business. For example, water and wastewater treatment works, pumping stations, service reservoirs, storm tanks, and mechanical sewer overflows.
- A water infrastructure model to assess the risk of bursts in our water network
- A wastewater infrastructure model to predict collapses and blockages across our sewer network.

For some assets, a complex modelling approach is not appropriate. For these assets, we generate our understanding from a series of targeted 'manual' investigations. This is the case for some complex solutions, new quality drivers, other statutory drivers, ongoing annual investments, and IT and software investment.

Not all our risks can be modelled using our asset deterioration models and not all risks are related to failure of assets due to age and condition. Other non-asset failure business related risks are identified through different routes such as assessment of existing asset performance and capabilities against newly emerging regulatory and environmental standards. We label these risks and the associated solutions 'Project Charters'.

Assessment is typically carried out by subject matter experts and scored against the 6 SMF categories to ensure that both modelled and non-modelled risks can be considered consistently by the DMF's downstream optimisation processes.

7.3 Cost efficiency

Cost efficiency is a core tenet in our PR24 Business Case planning. We have been proactive in integrating best practices, leveraging new markets and collaborations, harnessing innovative

technologies, and building an excellent procurement system to deliver cost efficiency across our whole business plan.

Yorkshire Water's business plan for PR24 encompasses a range of business cases and our approach to cost efficiency reflects this diversity of needs. Yorkshire Water uses data gathered over the last 20 years to inform our Unit Cost Database (UCD) which we use to estimate capital cost based on historical norms.

Whenever a scheme is completed, the actual observed cost information is used to create historical cost models for activities undertaken. Taking actual observed costs ensures we only allow for the costs likely to occur. Realised risk is included in the cost models so that the modelled output provides and average cost estimate for the proposed scope reflecting an efficient and effective delivery process. Cost models are deployed after technical identification of scope, followed by optioneering to give an average cost estimate for the project. The output of the UCD is then subject to internal quality assurance and portfolio optimisation. Embodied carbon models are deployed in conjunction with the cost models, which use actual outturn data to provide an estimate of embodied carbon. The likely operating cost is estimated by category (energy, chemicals, maintenance, business rates, sludge transport) by a process engineer or another technical expert.

Once we have understood our risks to service, identified our potential interventions and estimated efficient costs, we assess whether the solutions are viable against our 'six capitals' framework and monetise the whole costs and benefits of the project.

At the completion of asset modelling and Project Charter development and the quantifying of cost and benefit, we move on to the active decision-making phase of our process. The EDA Asset optimisation engine is used to assess all our collected data through the EDA Portfolio Optimisation Model. This is described in Section 6.2.1.

The EDA Portfolio Optimisation Model is used to run a series of calculations which apply all the SMF valuation rates to select & pick the best mix of solutions to meet a given set of objectives (cost & service constraints) set within the optimiser settings; Tens of thousands of calculations are made, and options ranked for the overall best net-benefit, ensuring that the programme of proposed investment delivers the optimal outcome for our customers and the wider business.

Hundreds of scenarios can be run, considering the impact of future asset risks, or looking for the optimal outcomes in differing situations i.e., looking for the least carbon intensive outcome or the greatest reduction in hydraulic sewer flooding. As a result of the standardisation introduced by the SMF, we can be sure that all risks across the business are considered in a consistent manner.

As part of our drive to meet ever changing business needs and satisfy our need for cost efficiency, we continuously run, review, and rerun optimisations in an iterative way, to best deliver our investment needs across our entire asset base, whilst ensuring a robust, empirical view of investment benefit is measured and quantified as part of our plan.

After this, we can engage in portfolio optimisation by applying annuitized costs and benefits aligned with HM's Treasury Green Book and the Ofwat recommended Spackman approach to annuitisation and discounting. This ensures the maximum net benefit is derived for the service objectives set by our customers.

There are some projects where a detailed UCD modelling approach isn't possible and their use varies across some business cases. For business cases which have not been priced with our cost models, we have generated costs with alternative methods. We have utilised 3rd party consultants, historical experience delivering similar projects, and 'going to market' to source indicative costs from potential suppliers.

7.4 Assurance of Costs

Board assurance of the PR24 plan takes place in the context of well embedded risk management and assurance processes with key components of the plan receiving further challenge, scrutiny and assurance by external specialist firms. The assurance approach is risk-based and aligned to the three levels of defence assurance model. The assurance process includes audit checks and challenges by data providers, data managers, senior managers, directors and its independent auditors for the PR24 programme.

Yorkshire Water has subject matter experts across the business and costs have been built for the required solutions by experienced costing engineers within the asset management team. Oversight has been provided by senior management and regulatory economists, utilising external expertise. KPMG have completed a deep dive review of selected data tables, including CW3 and CWW3. The review includes the application of seven tests including tracing all data back to source, reviewing adherence to Ofwat guidance, trend analysis, data transposition checks and whether the procedure documents and assurance statement have been produced and signed off are included as part of this deep dive.

Any actions identified by KPMG as part of the deep dive review have been responded to and no material actions were outstanding at the time of submission. For more information on assurance, please see our assurance and audit appendices, which provide information on the assurance process over the programme and provide the reports from the independent external auditors.

Read more about this at
Assurance Process and Findings

Read more about this at
Auditor reports KPMG, T and T, others

8. Customer Protection

8.1 Performance Commitments

We have summarised which of our enhancement cases deliver Performance Commitment (PC) benefits for our customers as a key driver of the investment case, or as an additional or long-term benefit.

Table 8.1: Water Enhancement Cases and their Linked PCs

Case	Linked PCs
DWI	Compliance Risk Index - CRI
	Customer contacts about water quality
	Unplanned outage (additional benefit)
Water Resilience	Unplanned Outage (long term)
	Water Supply Interruptions (long term)
Supply-Demand	Leakage
	PCC
	Business Demand
	Unplanned Outage (long term)
Metering	Leakage
	PCC
	Business Demand
Clean Water WINEP	Biodiversity
Security – SEMD	None
Security – Cyber	None
Security - ECAF	None

Table 8.2: Wastewater Enhancement Cases and their Linked PCs

Case	Linked PCs
STW Growth	None
Appropriate Measures	None
Coastal Overflows	Bathing Water Quality
Wastewater WINEP	Bathing Water Quality
	Storm Overflows

	River Water Quality
Living with Water	None

Table 8.3: Cross-Business Enhancement Cases and their Linked PCs

Case	Linked PCs
Greenhouse Gas Reduction	Operational greenhouse gas emissions - water
	Operational greenhouse gas emissions - wastewater

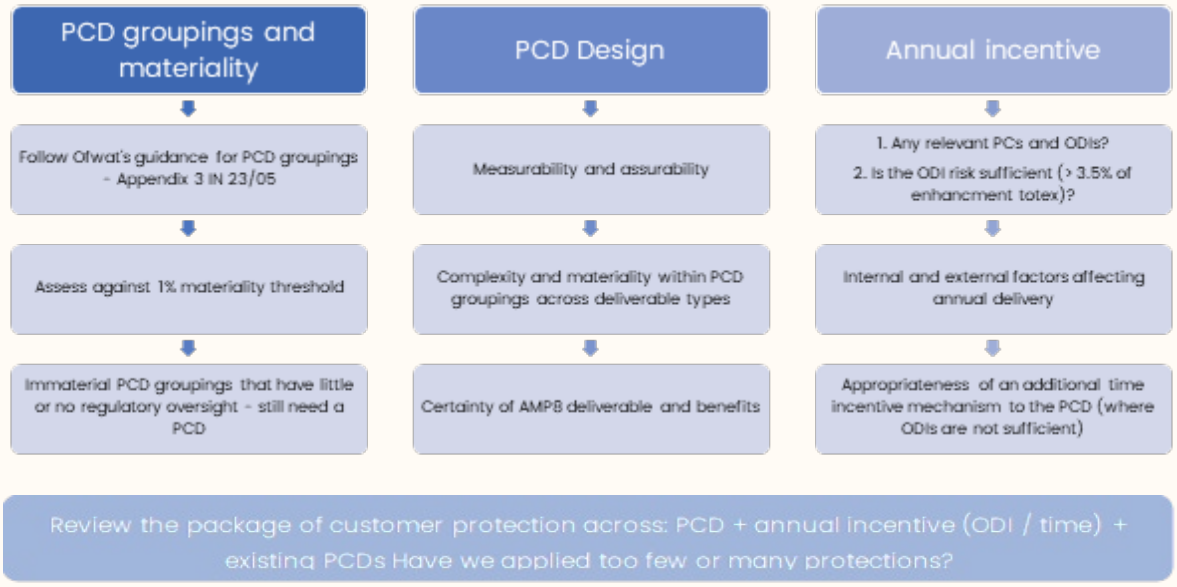
We discuss this in more detail in the individual cases.

8.2 Price control deliverables (PCDs)

We have assessed our proposed enhancement programme against Ofwat's PR24 final methodology and its information notice (IN 23/05[7]) that set out its expectations for price control deliverables as part of customer protection.

We have also considered the purpose of the PCDs and how to balance stewardship of each enhancement case with the wide range of activities we need to undertake for PR24. Broadly, we have undertaken three steps:

Figure 5 Our PCD Development Process



8.2.1.1 PCD groupings and materiality

We reviewed our data tables CW3 and CW3 against the assigned PCD grouping under Appendix 3 to IN 23/05. We calculated the 1% materiality threshold for PCDs to be:

- £32m for wholesale water
- £43m for wholesale wastewater.

For each our PCD groupings that fell below the 1% threshold, we assessed to determine whether there was regulatory oversight from Defra, EA, DWI or Ofwat.

As a result of our materiality assessment, we found 15 enhancement cases/subcases did not require a PCD. These are summarised in the table below.

[7] Appendix 3 - IN 23/05 Further guidance on price control deliverables for PR24 - Ofwat

Table 8.4: Cases Under the Materiality Threshold

Immaterial enhancement cases/subcases	
Water • WINEP - Biodiversity & Invasive species • WINEP - Fish passage/river restoration • WINEP - Fish screening- Eels/SAFFA • WINEP - Biodiversity & Invasive species • WINEP - Water Resources environment protection • WINEP - Surface water catchment management • DWI – Meeting lead standards • Resilience • SEMD and Cyber* • Enhanced Cyber Assessment Framework (ECAF)	**Wastewater** • WINEP - Investigation into nitrogen removal technically achievable limit • WINEP - Monitoring of intermittent wastewater discharges and flow monitoring of water treatment works discharges* • WINEP - River water quality investigation* • WINEP - Water quality improvements for chemicals (not sanitaries or nutrients) • WINEP - Septic tank removal and replacement with secondary treatment • WINEP - Schemes to meet the 25 year Environment Plan that do not fall under any other driver • WINEP - Schemes to make the recycling of sludge to land more robust

* Refer to each enhancement case for more detail on our analysis of materiality.

8.2.1.2 PCD design

In selecting the parameters for PCDs, we have considered:

- Only the enhancement cases that require a PCD under the materiality assessment.
- Types of deliverables expected from the enhancement totex and how these could be measured and audited; this has been informed significantly by learnings from AMP7 delivery of schemes such as Living with Water .
- Consistency of deliverables with Ofwat's IN 23/05 guidance and Accelerated Infrastructure Delivery (AID) Project PCDs for AMP7 Transition Expenditure.
- Yorkshire Water's two existing PCDs under the Accelerated Infrastructure Delivery scheme that continue into AMP8, Ilkley Bathing Waters and Wheatcroft CSO.
- Appropriate delivery profiles that align with projected spend, regulatory deadlines and potential delivery risks.
- Conditions for a PCD, such as ability to substitute in alternative schemes or dependencies on other regulatory processes.
- The expected regulatory burden of the associated measurement and reporting compared with materiality of line items within enhancement cases.

We consider all deliverables should be considered complete if we have achieved 'beneficial completion', which is an established approach for the industry to meet EA or DWI obligations. This means that customers are receiving the benefit of the upgrade or new installation, but some minor works may be in the last stages of close-out.

Consistent with Ofwat's guidance to specify deliverables at an outcome level, we have sought to retain flexibility to develop the best value solutions and facilitate the adoption of innovative technologies or techniques. We have also developed our delivery programmes to allow further refinement of solutions (as required) and for engagement with contractors and the supply chain, but ensure we committed to delivering benefits for customers throughout AMP8.

When considering the regulatory burden, we have tried to align measurement and reporting with the APR process as there are already clear definitions and procedures for assurance. We also consider that supporting documents for DWI and EA submissions and approvals will overlap with reporting requirements for PCDs. For newer deliverable types, we have not fully defined the extent of any reporting. We anticipate some of our PCDs will be consistent with other companies with statutory work programmes and we will work with Ofwat and the sector to determine the appropriate processes.

8.2.1.3 PCD payments

We considered PCD payments could be calculated in different ways – average unit costs or a menu of costs – as highlighted by IN 23/05. We also reviewed Ofwat's PCD payment to trial how PCD payments are likely to be implemented and discounted. We have not included cost sharing in our PCD payments given these are as yet unknown. Accordingly, we propose to adopt average costs where there is uniformity in the deliverables. We propose to adopt a menu of costs where there is significant variation in deliverable types and associated costs.

We have not repeated each section of Ofwat's IN 23/05 for each PCD. Given the scale of the AMP8 programme for the sector, we anticipate there may be cases where schemes are partially complete at the end of AMP8 and will reach beneficial completion early in AMP9. We are pleased that Ofwat recognises this challenge, but we would welcome further guidance on how companies should evidence any request from a company for Ofwat to not apply a PCD, as Ofwat set out in section 4.

We have adopted interim milestones for larger projects to partially address this scenario as we will need to be developing our solution and incurring costs throughout the AMP to reach completion by 31 March 2030 for our larger schemes.

We will revise all PCD payments following the draft decision consistent with the calculations shown for each PCD.

8.2.1.4 Annual incentive

We have reviewed whether the ODI exposure for each enhancement case is >3.5% of the enhancement totex, as per Ofwat's threshold in IN23/05. Where the ODI is not sufficiently significant, we have considered a time incentive and explained our rationale in each enhancement case. We have not proposed a time incentive for our immaterial enhancement cases:

- Greenhouse gas reduction (net zero)
- Growth at sewage treatment works
- Living with Water

We propose a condition for all statutory spend, that is, where any scope changes are a result of new agreements with EA, DWI or Defra, then non-delivery should not be counted towards any delay penalties.

Depending on whether Ofwat proposes to apply individual year incentives or cumulative incentives across the AMP, we will revise the penalty rate for each case. When deciding on the value, we have considered how to complement the PCD but retain a level of simplicity in implementation. In determining when to apply time incentives, we have considered where there may be informal delay incentives. For some of our larger projects, we have several decision points accounting for new information from investigations, scheme development and even construction (for example, our preferred plan may be infeasible on environmental grounds, or a new borehole once drilled may not deliver the required yields).

We have not included contingencies for the creation of these new, alternative solutions and so we will bear the costs above the totex cost sharing mechanism on behalf of customers. Similarly, we will work collaboratively with our stakeholders to move through the application and permit processes for new solutions as fast as possible to prevent and/or mitigate programme delays.

8.2.1.5 Package of PCDs

We propose to protect around 90% of our enhancement funding requests with PCDs. Our deliverables and outputs are largely consistent with those we must report to the EA, DWI or Defra. However, we consider the introduction of PCDs will bring some additional governance and assurance processes for the company, both for PCDs with annual incentives and for the end-of-AMP review. We have not sought additional costs within our enhancement cases and will manage these within our base allowances.

We note this level of customer protection creates greater downside risk for companies compared to PR19. For our statutory programmes, we work closely with DWI, EA and Defra

through our solution development, programme revisions and approvals. Each AMP our solutions have evolved as we receive new information and address regulator feedback.

We understand that Ofwat would prefer minimal or no in-period changes (section 5 of IN23/05) to PCDs, however we would welcome the opportunity to work with Ofwat and sector on how to manage any divergence over AMP8 in solutions for our statutory programmes from the PR24 business plan.

8.2.1.6 Summary of our PCDs

We propose 14 PCDs for AMP8 in addition to our two existing PCDs, summarised in the following table. We discuss the approach for each enhancement case in more detail in the enhancement cases and WINEP appendix.

Table 8.5: PCD Summary

	AMP8 price control deliverable	Enhancement case/subcase
Accelerated Infrastructure Delivery Project		
1	Inland bathing water improvement scheme - Wharfe Ilkley	WINEP - Bathing water quality and Storm Overflow Reduction Plan
2	Coastal bathing water improvement	Storm Overflow Reduction Plan
Water		
3	PCDW11 Supply-side improvements delivering benefits in 2025-2030	WRMP Supply-Demand
4	PCDW12 Metering	Metering
5	PCDW13 Improvements to taste, odour and colour	Water quality (DWI)
6	PCDW14 Addressing raw water quality deterioration	Water quality (DWI)
Cross-Business		
7	PCDW18 Greenhouse gas reduction (net zero)	Greenhouse gas reduction (net zero)
	PCDWW34 Greenhouse gas reduction (net zero)	
Wastewater		
8	PCDWW2 Flow monitoring / River water quality monitoring	WINEP - Upstream and downstream monitoring of all YW outfalls
9	PCDWW4 Flow to full treatment	WINEP - Storm Overflow Reduction Plan and Bathing water quality
10	PCDWW5a Storm overflows (group)	WINEP - Storm Overflow Reduction Plan group, Bathing water quality, and Coastal bathing water overflows
	PCDWW18 Investigations	
11	PCDWW5b WFD_IMP Storm overflows (group)	WINEP - Storm Overflow Reduction Plan
12	PCDWW6 Storm overflow - new / upgraded screens	WINEP - Storm Overflow Reduction Plan group, Bathing water quality and Coastal bathing water overflows

13	PCDWW10 Treatment for phosphorus removal	WINEP - River water quality improvements (sanitaries and nutrients) and Schemes driven by population numbers under Urban Wastewater Directive
	PCDWW12 Treatment for tightening of sanitary parameters	
14	PCDWW27 Growth at sewage treatment works (excluding sludge treatment)	Growth at sewage treatment works
15	PCDWW35 Additional line 1 – Living with Water	Living with Water
16	PCDWW38 Additional line 4 - Appropriate Measures	Appropriate measures

9. Annex

Annex 9.A Reporting Lines with no Proposed Expenditure

We cover the WINEP reporting lines with no proposed expenditure in the WINEP Enhancement Case Appendix.

Table 9.1: CW3 Lines with No Planned Expenditure

Line Number	Line Description	Reason
CW3.50	Interconnectors delivering benefits in 2025-2030; SDB capex	No planned enhancement expenditure for this driver
CW3.51	Interconnectors delivering benefits in 2025-2030; SDB opex	
CW3.52	Interconnectors delivering benefits in 2025-2030; SDB totex	
CW3.53	Supply demand balance improvements delivering benefits starting from 2031; SDB capex	No planned enhancement expenditure for this driver
CW3.54	Supply demand balance improvements delivering benefits starting from 2031; SDB opex	
CW3.55	Supply demand balance improvements delivering benefits starting from 2031; SDB totex	
CW3.56	Strategic regional resource solutions; SDB capex	No planned enhancement expenditure for this driver
CW3.57	Strategic regional resource solutions; SDB opex	
CW3.58	Strategic regional resource solutions; SDB totex	
CW3.61	New meters requested by existing customers (optants); metering opex	No opex requested for this driver
CW3.63	New meters introduced by companies for existing customers; metering capex	No planned enhancement expenditure for this driver
CW3.64	New meters introduced by companies for existing customers; metering opex	
CW3.65	New meters introduced by companies for existing customers; metering totex	
CW3.67	New meters for existing customers - business; metering opex	No opex requested for this driver
CW3.69	Replacement of existing basic meters with AMR meters for residential customers; metering capex	No planned enhancement expenditure for this driver
CW3.70	Replacement of existing basic meters with AMR meters for residential customers; metering opex	
CW3.71	Replacement of existing basic meters with AMR meters for residential customers; metering totex	
CW3.73	Replacement of existing basic meters with AMI meters for residential customers; metering opex	No planned enhancement expenditure for this driver
CW3.76	Replacement of existing AMR meters with AMI meters for residential customers; metering opex	

CW3.78	Replacement of existing basic meters with AMR meters for business customers; metering capex	
CW3.79	Replacement of existing basic meters with AMR meters for business customers; metering opex	No planned enhancement expenditure for this driver
CW3.80	Replacement of existing basic meters with AMR meters for business customers; metering totex	
CW3.82	Replacement of existing basic meters with AMI meters for business customers; metering opex	
CW3.85	Replacement of existing AMR meters with AMI meters for business customers; metering opex	No opex requested for this driver
CW3.94	Improvements to taste, odour and colour (green solutions); enhancement capex	No planned enhancement expenditure for this driver
CW3.95	Improvements to taste, odour and colour (green solutions); enhancement opex	
CW3.96	Improvements to taste, odour and colour (green solutions); enhancement totex	
CW3.100	Addressing raw water quality deterioration (green solutions); enhancement capex	No planned enhancement expenditure for this driver
CW3.101	Addressing raw water quality deterioration (green solutions); enhancement opex	
CW3.102	Addressing raw water quality deterioration (green solutions); enhancement totex	
CW3.103	Conditioning water to reduce plumbosolvency for water quality; enhancement capex	No planned enhancement expenditure for this driver
CW3.104	Conditioning water to reduce plumbosolvency for water quality; enhancement opex	
CW3.105	Conditioning water to reduce plumbosolvency for water quality; enhancement totex	
CW3.107	Lead communication pipes replaced or relined; enhancement opex	No opex requested for this driver
CW3.110	External lead supply pipes replaced or relined; enhancement opex	No opex requested for this driver
CW3.112	Internal lead supply pipes replaced or relined; enhancement capex	No planned enhancement expenditure for this driver
CW3.113	Internal lead supply pipes replaced or relined; enhancement opex	
CW3.114	Internal lead supply pipes replaced or relined; enhancement totex	
CW3.115	Other lead reduction related activity; enhancement capex	No planned enhancement expenditure for this driver
CW3.116	Other lead reduction related activity; enhancement opex	
CW3.117	Other lead reduction related activity; enhancement totex	
CW3.118	Resilience; enhancement water capex	No planned enhancement expenditure for this driver
CW3.119	Resilience; enhancement water opex	

CW3.120	Resilience; enhancement water totex	
CW3.125	Security - Cyber; enhancement water opex	No opex requested for this driver
CW3.130	Improvements to river flow - APR 4L.76 - Capex	This was entered for the AMP7 expenditure only
CW3.131	Improvements to river flow - APR 4L.77 - Opex	
CW3.134	Additional line 3; enhancement water capex	We are not currently using this additional line
CW3.135	Additional line 3; enhancement water opex	
CW3.136	Additional line 4; enhancement water capex	We are not currently using this additional line
CW3.137	Additional line 4; enhancement water opex	
CW3.138	Additional line 5; enhancement water capex	We are not currently using this additional line
CW3.139	Additional line 5; enhancement water opex	

Table 9.2: CWW3 Lines with No Planned Expenditure

Line Number	Line Description	Reason
CW3.50	Interconnectors delivering benefits in 2025-2030; SDB capex	No planned enhancement expenditure for this driver
CW3.51	Interconnectors delivering benefits in 2025-2030; SDB opex	
CW3.52	Interconnectors delivering benefits in 2025-2030; SDB totex	
CWW3.156	Reduce flooding risk for properties; enhancement capex	
CWW3.157	Reduce flooding risk for properties; enhancement opex	
CWW3.158	Reduce flooding risk for properties; enhancement totex	
CWW3.159	First time sewerage; enhancement capex	
CWW3.160	First time sewerage; enhancement opex	
CWW3.161	First time sewerage; enhancement totex	
CWW3.162	Sludge enhancement (growth); enhancement capex	
CWW3.163	Sludge enhancement (growth); enhancement opex	
CWW3.164	Sludge enhancement (growth); enhancement totex	
CWW3.165	Odour and other nuisance; enhancement capex	
CWW3.166	Odour and other nuisance; enhancement opex	

CWW3.167	Odour and other nuisance; enhancement totex	
CWW3.168	Resilience; enhancement wastewater capex	
CWW3.171	Security - SEMD; enhancement wastewater capex	
CWW3.172	Security - SEMD; enhancement wastewater opex	
CWW3.173	Security - SEMD; enhancement wastewater totex	
CWW3.174	Security - cyber; enhancement wastewater capex	
CWW3.175	Security - cyber; enhancement wastewater opex	
CWW3.176	Security - cyber; enhancement wastewater totex	
CWW3.183	WINEP / NEP Investigations (Frequently Spilling Storm Overflows) capex	
CWW3.184	WINEP / NEP Investigations (Frequently Spilling Storm Overflows) opex	
CWW3.185	Conservation drivers capex	
CWW3.186	Conservation drivers opex	
CWW3.189	Additional line 5; enhancement wastewater/bioresources capex	
CWW3.190	Additional line 5; enhancement wastewater/bioresources opex	